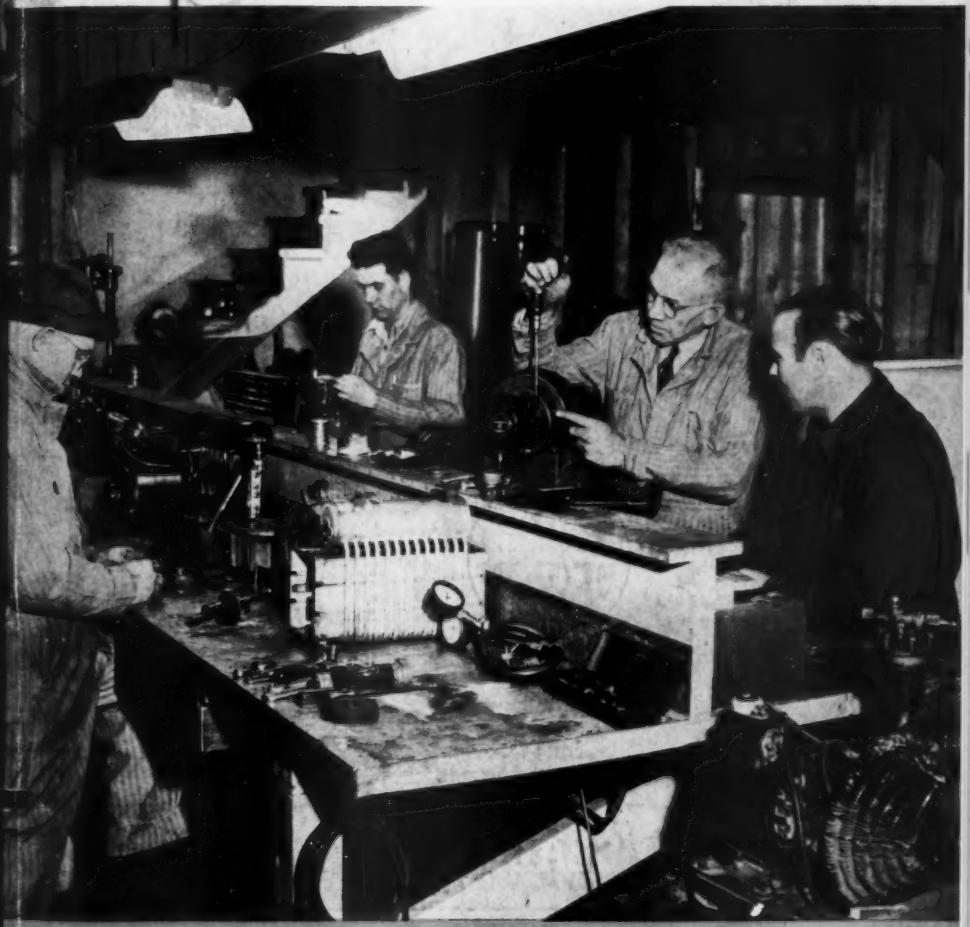
TECHNOLOGY DEPT.

The Refrigeration Service Engineer

PUBLIC LIBRARY
JAN 22 1945
DETROIT

VOL. 13 | NO. 1 ★ ★ ★ JANUARY . 1945



GOVERNMENT RULINGS • SERVICE POINTERS •
THE COLDSPOT ELECTRIC REFRIGERATOR •
GETTING INTO BUSINESS FOR YOURSELF •

R v.13 1945

WHEN A
BETTER PRODUCT
IS AVAILABLE,
THERE IS NO ADVANTAGE
IN ACCEPTING A
SUBSTITUTE

MODERN DESIGN

Only
CHICAGO SEALS
HAVE THE SELF-ADJUSTING SLEEVE LOCK WHICH ASSURES PERFECT SEALING EVEN ON BENT OR SCORED SHAFTS

Best for General Seal Replacements

Write for price list No. 444

CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL.

THE REFRIGERATION SERVICE ENGINEER, Nickerson & Collins Co., Publishers, 435 N. Waller Ave., Chicago 44, Ill. Published monthly. Vol. 13, No. 1, January, 1945. Entered as second class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Subscription in the United States, $2.00 per year; all other countries, $3.00 per year.

TECHNOLOGY

TECHNOLOGY DEPT:

COLD FACTS BY ANSUL

PREHISTORIC MAN EARLY FOUND THAT COLD SLOWS UP DECAY -- AND LIKE THE MODERN ESKIMO BURIED SURPLUS MEAT UNDER DEEP SNOW IN WINTER.

MODERN MAN REQUIRES YEAR-ROUND DEPENDABILITY -- AND THAT MEANS ALWAYS-RELIABLE REFRIGERANTS LIKE **ANSUL LIQUID SULFUR DIOXIDE** AND **ANSUL LIQUID METHYL CHLORIDE** IMMEDIATELY AVAILABLE.

Our technical book, "Ansul Refrigerants" (3rd Edition) available upon request

Ansul Chemical Company, MARINETTE, WIS.

"Now in our 30th year"

AGENTS FOR KINETIC'S "FREON -11," "FREON -12" AND "FREON-22"

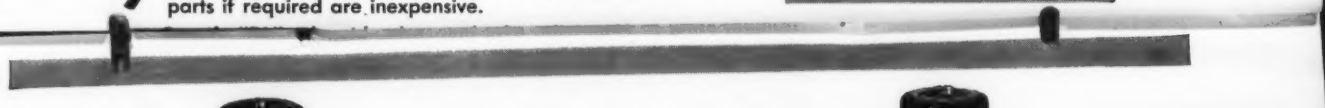
7 REASONS WHY

"DL" SOLENOID VALVES ARE PREFERRED

1. POWERFUL—Ample power to lift against high pressures.
2. QUIET—Design of plunger and guide tube minimizes objectionable A.C. hum.
3. EASILY INSTALLED—Substantial mounting boss on valve body makes for easy, rigid installation.
4. EASILY SERVICED—Can be disassembled and cleaned without disconnecting refrigerant lines or wiring.
5. POSITIVE CLOSING—Non magnetic needle and seat and strong "kick off" spring assure tight closing.
6. LONG LIVED—Valve bodies are of close-grained non-porous cast brass. Coils are of moisture-proof construction.
7. ECONOMICAL—Draw little current. Replacement parts if required are inexpensive.

FOUR WIRE COIL

One of the features of "DL" solenoids preferred by jobbers and service men is the dual 115-230 volt 4 lead coil. This coil can be used on either 115V60 cycle or 230 volt 60 cycle current by connecting the 4 leads in the right sequence. Correct wiring diagram is shown right on the coil—a great time saver.



parts if required are inexpensive.

No. 683-3—This reliable valve, like all "DL" solenoids is designed for use with any fluid that will not attack brass. Furnished with three sizes of orifices, 1/8", 3/16", and 7/32".

Nominal capacity—liquid line

3/16" orifice	3 tons Freon	6-1/2 tons Methyl
7/32" orifice	3-3/4 tons Freon	8-3/4 tons Methyl

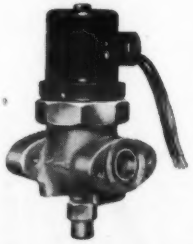
3/8" female N.P.T. connections.

No. 681—The No. 681 is of the pilot operated type and requires a minimum pressure drop of 1 p.s.i. to operate the piston.

Nominal capacity—liquid line

7-1/2 tons Freon 17 tons Methyl

1/2" female N.P.T. connections.



No. 686—The No. 686 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 1-3/4 p.s.i. to operate the piston when used with refrigerants, 5 p.s.i. on water. It is made with 2 sizes of orifices, 1/2" and 5/8"

Nominal capacity—liquid line

1/2" orifice	11 tons Freon	23 tons Methyl
5/8" orifice	17 tons Freon	34 tons Methyl

DETROIT LUBRICATOR COMPANY General Offices: DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators

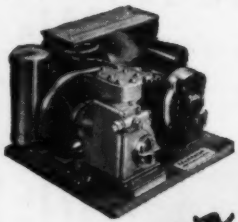
Happy Tales of Trouble-Free Performance

What's going on here?

Even the chops are happy over Joe's new Kelvinator Condensing Unit!

Wise service men always specify Kelvinator. An unexcelled record of 30 years proves Kelvinator Condensing Units give *more* dependability, *more* economy, *more* performance.

Kelvinator distributors and zone offices stock a complete line of refrigeration supplies. See them for your installation material such as tubing, controls, dryers, etc.

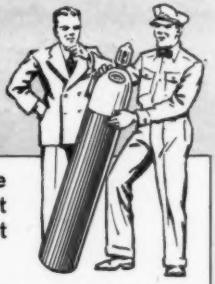


Kelvinator

CONDENSING UNITS
SEALED · OPEN

For Your Home—Remember Kelvinator Refrigerators, Electric Ranges, Water Heaters and Home Freezers.

Service Engineers Should Know...



That the markings on the shoulder of each refrigerant cylinder reveal five important bits of information.

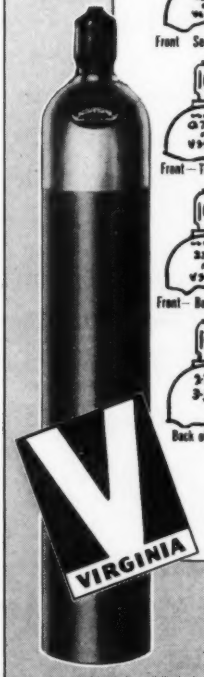
I. C. C. shipping container classification. This particular number (I. C. C. - 4B - 300) authorizes transportation of Sulfur Dioxide, Methyl Chloride, and certain other low pressure refrigerants.

This is the serial number which is used to identify the cylinder for all normal record purposes.

The letter in this position on the cylinder indicates the name of the company which manufactured the container.

These letters identify the registered owner of the container. (If complete identity of Nos. 3 and 4 row is ever required, write: Bureau of Explosives, 50 Vesey Street, New York, New York.)

Hydrostatic test date markings. The top symbols indicate a previous test date, the bottom symbols the last test date. Figures at the left indicate the month, the Letter "T" means "Hydrostatically tested"; figures at right, the year the tests were made. The law says cylinders be tested once every five years.



Manufacturers of "Virginia" Refrigerants and Agents for Kinetic's "Freon-12"—"Freon-22"—"Freon-11".

VIRGINIA Smelting Co.

WEST NORFOLK, VIRGINIA

76 BEAVER ST., NEW YORK 5 :-: 131 STATE ST., BOSTON 4

(Official U. S. Navy Photo)

SAFE AND DRY!

- Back to their ship paddle these amphibious crews in their sturdy rubber boats. These light, capacious craft are easily maneuvered and are known for landing their loads safe and dry.

- The servicemen of refrigeration have long relied upon TZ for successful trips, when measures taken must be safe and resulting conditions dry.

- TZ destroys water chemically and neutralizes acid.

"A Little Goes a Long Way and Does a Big Job"

THAWZONE

Fully Protected by U. S. Patents

The PIONEER FLUID DEHYDRANT

HIGHSIDE CHEMICALS COMPANY

195 VERONA AVE.

NEWARK 4, N. J.

HENRY
Cross section of Type 743 Henry Dehydrator.
Greater Efficiency Because of Patented Dispersion Tube. Entire volume of the dehydrant is exposed to penetration by refrigerant.
Strainer Tube Can Be Easily Cleaned or Replaced. The reinforced monel strainer tube is silver soldered to the outlet fitting eliminating by-passing of the refrigerant.
Abso-Dry Pressure Sealing Process. Loosening of seal cap prior to installation produces hissing sound due to escape of dehydrated air indicating that dehydrant is absolutely dry.
One Piece Drawn Brass Shell. Type 743 Dehydrators in the 6" length are drawn in

Easy to clean! Easy to restore to original efficiency by merely replacing the dehydrant! These are your first reactions when you remember field problems encountered in servicing Refrigeration and Air Conditioning installations. Apart from the refillable feature, however, Type 743 Henry Dehydrator should be the choice of anyone interested in more efficient removal of moisture in a system. This is because many of the standard Henry features of design and construction that have made Henry Dehydrators the choice of the Industry are incorporated in this refillable dehydrator. You will find these features described in detail on the left.

Type 743 Refillable Dehydrator is available in a series of sizes and capacities that will take care of the majority of commercial installations. Best of all, the unit is so reasonably priced that it will pay any service or contracting organization to use it as standard equipment.

EXPORT DEPARTMENT
13 E. 40th STREET
NEW YORK, N. Y.
Cables: ARLAB

HENRY VALVE CO.

3260 WEST GRAND AVENUE, CHICAGO 51, ILLINOIS

PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR CONDITIONING
AMMONIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS

APPROVED FOR NAVY, MARITIME COMMISSION AND ARMY USE

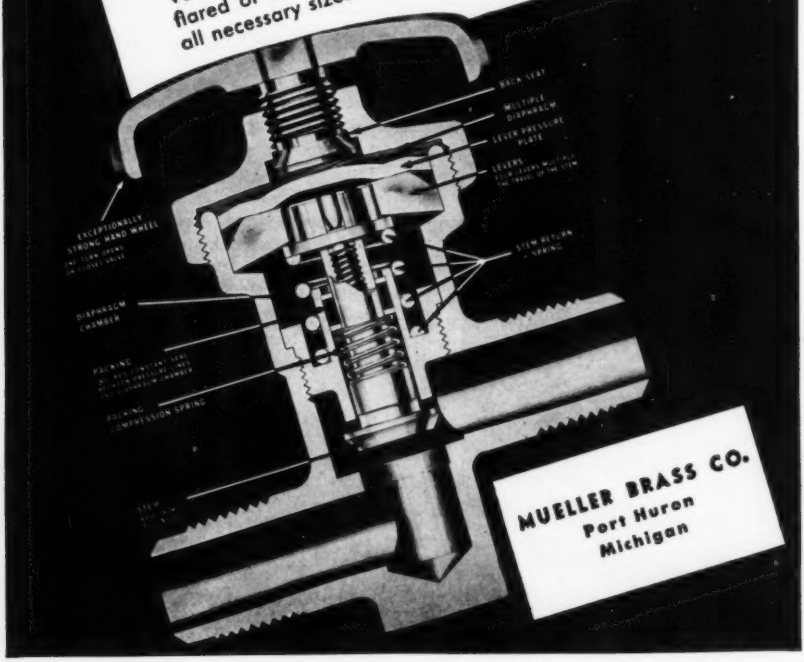
Increased Diaphragm Life

PROLONGS THE SERVICE LIFE OF THE VALVE

Our TRIPL-SEAL DIAPHRAGM VALVES are constructed upon a new and revolutionary principle involving a minimum of movement. The greatly increased multiple diaphragm is never deflected past its normal center; thus giving it much greater service life. It provides positive sealing at three essential points. The valve has positive and easy closing provided by a single turn of the hand wheel.

Body and cap are of seepless forged brass; maximum mounting strength is provided.

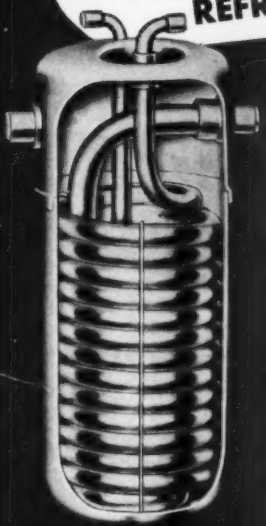
Valves are furnished in two way and angle type—flared or solder type ends, and a complete range of all necessary sizes.



MUELLER BRASS CO.
Port Huron
Michigan

Temprite ACCUMULATOR-INTERCHANGER

Improves OPERATION OF LOW TEMPERATURE REFRIGERATION EQUIPMENT



The Temprite accumulator-interchanger is of rugged all-steel construction, hermetically fabricated by means of the copper hydrogen furnace weld which assures positive gas tight joints and absolute freedom from scale.

THE Temprite accumulator-interchanger is designed to improve the operation of low temperature refrigeration equipment by:

❶ Permitting one hundred per cent of the evaporator coil surface to become effective because it eliminates any necessity for using a part of this coil as a drying agent for the refrigerant:

❷ By eliminating return of liquid refrigerant to the compressor crankcase and:

❸ By preventing formation of flash gas in the evaporator coil.

The Temprite accumulator-interchanger is a newly designed liquid and suction line heat exchanger incorporating the accumulator principle which traps any liquid refrigerant that may spill over from the evaporator. The accumulator then holds the liquid refrigerant until the liquid line heat can evaporate it thus insuring dry gas being returned to the compressor at all times.

When this highly efficient unit is installed on any low pressure refrigeration system it permits lower temperatures to be obtained, avoids possibilities of compressor trouble and reduces operating costs.

★ *Applications* ★

Low Temperature Food Storage • Quick Freezing Applications
Low Temperature Industrial Coolers • Rivet Coolers • Steel Aging Cabinets

Dealers

Write our sales department today for complete specifications on this Temprite accumulator-interchanger unit. Prompt deliveries are assured on all orders carrying necessary priorities.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous Liquid Cooling Devices

45 PIQUETTE AVENUE . . . DETROIT 2, MICHIGAN

THE GAUGE THAT CAN BE KEPT ACCURATE *Always*

No one has ever found a way to make a pressure gauge that can't be knocked out of adjustment. But Marsh has developed the next best thing—a handy, basically sound way to correct a gauge that has been thrown out of adjustment by shock or over-pressure.

When a Marsh pointer fails to return to zero, you simply turn the "Recalibrator" screw, as illustrated above, until the pointer coincides with the zero mark.

Most errors in gauges are caused by distortion of the bourdon tube, which produces an improper relation between the tube and the movement. The conventional method of merely resetting the pointer does not correct this relationship. As a result the gauge may remain incorrect at certain points on the dial.

But the "Recalibrator" actually re-establishes the relation of the tube to the movement—actually does "re-calibrate" the gauge.

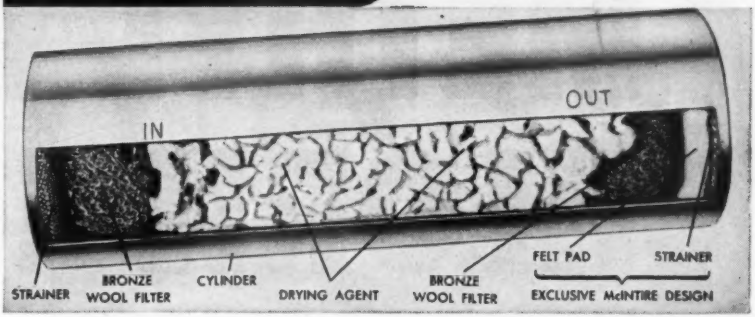
The manufacturer who takes the most pains to build a gauge that *is* accurate would naturally be the manufacturer to provide the best means of ***keeping*** it accurate!

JAS. P. MARSH CORP., 2059 Southport Avenue, Chicago 14, Illinois
Export Department: 155 East 44th Street, New York 17, New York

MARSH
Refrigeration Instruments

3-WAY PROTECTION FOR EVERY INSTALLATION!

NO MOISTURE
NO SEDIMENT
NO ACID



One DFN cartridge does *three* jobs. It adsorbs moisture. It filters sediment. It neutralizes acids. And it's the *only* unit that offers you this triple protection.

The uniformly packed, dust-free, reactivated drying agent removes all dangerous moisture. The packing is mechanical, insuring correct quantity and density to each cartridge to permit free flow of refrigerant up to rated capacity. An exclusive anti-sediment assembly covers the *complete area* of the outlet which filters the refrigerant through multiple layers of bronze wool, felt and wire mesh. Positive filtering action is secured — the smallest particles being retained in the cartridge.

When a DFN cartridge's long service life is ended, it is easily removed from the DFN shell and a new cartridge put in its place. No time consumed refilling with dehydrant on the job—no danger of loose packing. Hermetic sealing of the cartridge container insures a complete drying unit *when wanted*. Ask your distributor for this unique, triple-action DFN unit.

McINTIRE CONNECTOR COMPANY
Newark 5 **New Jersey**

Only the **DFN SYSTEM** DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS **FILTERS • NEUTRALIZERS**

DU PONT METHYL CHLORIDE

for your refrigeration work!

99.5% PURE—DRY—UNIFORM

DU PONT METHYL CHLORIDE—SPECIFICATIONS

Purity	99.5% Methyl Chloride
Moisture	0.008% by wgt. max.
Acid (as HCl)	0.001% by wgt. max.
Residue on Evaporation	0.01% by wgt. max.
Boiling Range (760mm)	−24.6° to −23.6°C.
Color	water white, clear

This free book is yours for the asking! Du Pont's 92-page Manual on Methyl Chloride is filled from cover to cover with practical, helpful data for every air conditioning and refrigeration designer, engineer and service man. Write for your copy today! E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

SPECIFY high-purity Du Pont Methyl Chloride as an original charge, for recharging, or as a completely satisfactory replacement for scarce or unavailable refrigerants.

ORDER WHAT YOU NEED, but don't hoard.

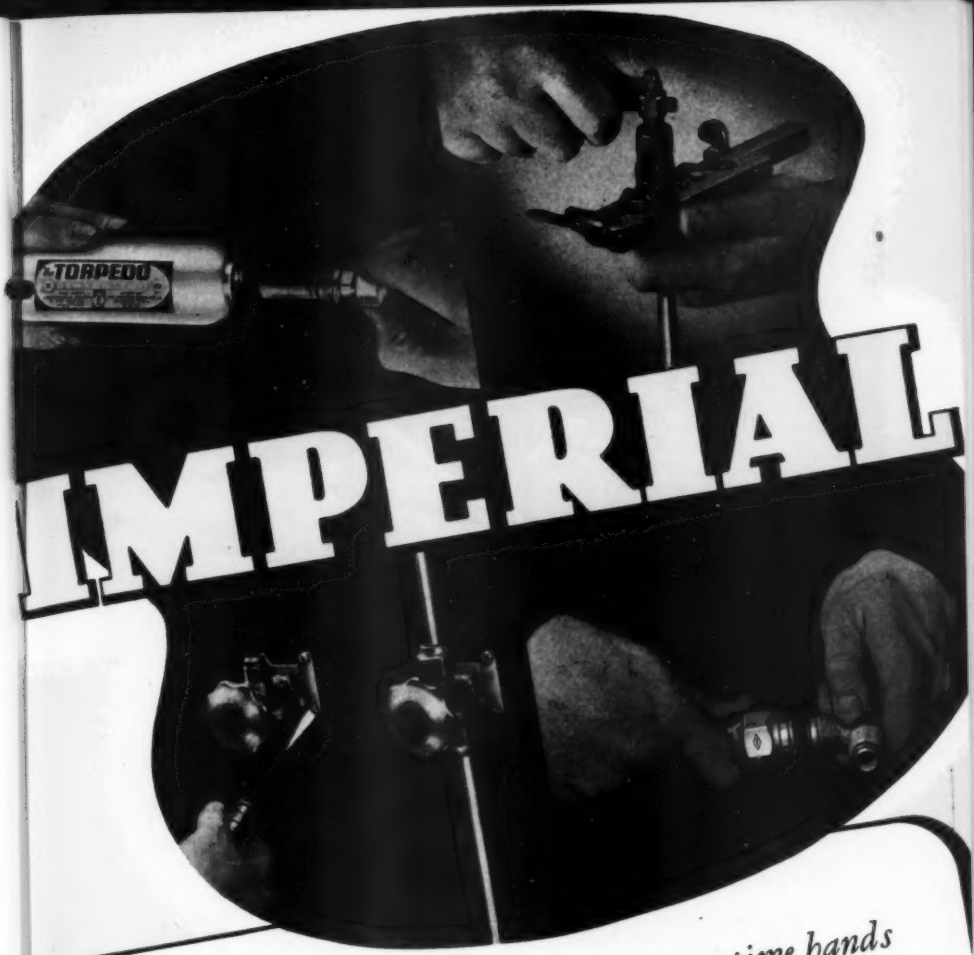
YOU CAN COOPERATE by *returning empty cylinders* promptly! That's how you can help keep deliveries moving *fast* to you and others.

Great stars in great radio plays make great entertainment . . . tune in "Cavalcade of America" —NBC Network—every Monday evening!

DU PONT ELECTROCHEMICALS

DU PONT REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



Quality Products that are helping busy wartime hands keep America's refrigeration and air conditioning systems operating . . . Fittings, Valves, Dehydrators, Tube Working Tools and Service Specialties.

THE IMPERIAL BRASS MFG. COMPANY

534 South Racine Avenue, Chicago 7, Illinois

EMBLEM OF I QUALITY

If, in winter weather, the location of a milk cooler temperature control switch is at a point where the temperature is much colder than that desired in the cooler, serious problems may result if ordinary controls are used . . . but NOT for the user of the Ranco 0-1414.

The Ranco 0-1414 may be subjected to extremely cold winter temperatures and function perfectly.

Specify Ranco 0-1414 for trouble-free milk cooler temperature control.

WORK WITH YOUR *Ranco* JOBBER

Ranco Inc.

COLUMBUS 1, OHIO

The Refrigeration Service Engineer

Vol. 13 No. 1

January, 1945

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems

Official Organ
REFRIGERATION SERVICE ENGINEERS SOCIETY

The Cover

Repair bench at Ruxton's Refrigeration, Yakima, Wash. C. Ruxton, owner, is at extreme right. First workman on left is working on rebuild job with assembly spread before him. See page 32.

Published by
Nickerson & Collins Co.
433-435 North Waller Ave.
Chicago, 44
Telephones Austin 1303-1304-1305

EASTERN OFFICE
420 Lexington Ave., New York 17
Telephone Lexington 2-4816

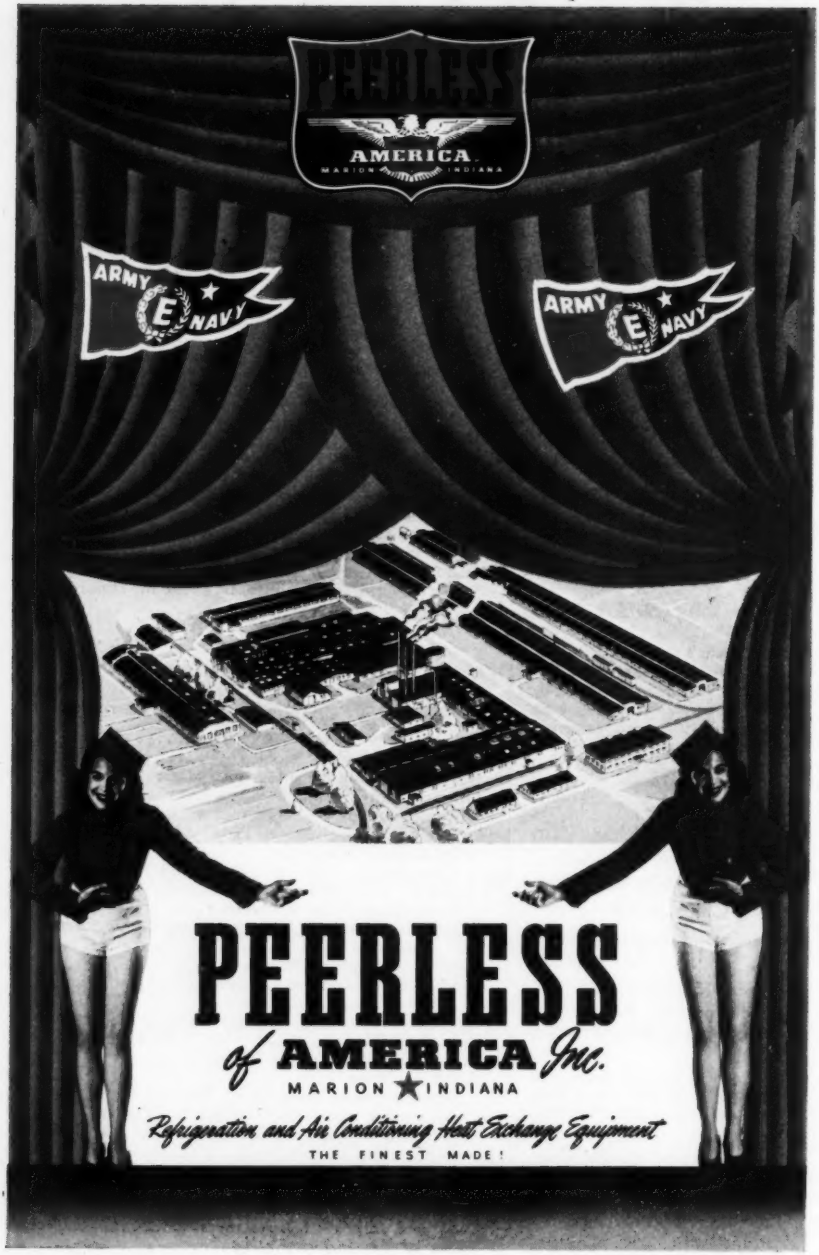
Publishers of Technical Books and Trade Journals Serving the Refrigeration Industries for over 50 years.

Subscription Rates United States $2.00 per year. Single copies 25c. All other countries $3.00 per year.

Copyright, 1945
by Nickerson & Collins Co., Chicago, 44

TABLE OF CONTENTS

Government Bureaus—News and Rulings 17
Supply of Motor Trucks Drastically Reduced... 17
Fractional Horsepower Motors 17
War Production Comes First 17
Wage or Salary Rate Increases 18
Delivery of Materials Will Delay Ice Refrigerator Production 18
Tire Allowances Reduced 18
Civilian Items Held to 1944 Level 18
Predictions and Trends for 1945 19
Construction, Operation and Servicing the Cold-spot Electric Refrigerator 20
Converting Mills Ice Cream Cabinets to Farm Freezers—*by L. K. Wright* 24
So You Want to Get Into Business for Yourself! —*by Paul B. Reed* 27
Service Pointers 30
Preventing Valve Freeze-up While Removing Moisture 30
Removing Broken Cap Screws 30
Roller Bar for Heavy Moving 30
Utilizing Worm Motor Brushes 31
Emergency T. E. V. Operation 31
Spring Handling Tool 31
Selling "Rebuilds" Builds Customers 32
Questions and Answers 34
Comments on Question 629 34
Reaction of Galvanized Pipe in Ammonia System 34
Ice Cream Hardening Problem 34
Changing to Automatic Expansion Valve 35
Norge Two-Temp. Charge 35
Evaporator Frost Problem 35
Cleveland Electrical League Discusses Air Conditioning 38
Coolers at Supply Outposts 39
Home Freezer Market Exaggerated Says Frigidaire Head 40
Suction Pressure on Airtemp Equipment 41
Advanced Training Course for Servicemen 42
A.S.R.E. Holds Annual Meeting 44
R.S.E.S. News 50
Interprovincial Association Meeting to Be Held 50
Milwaukee Petitions for R.S.E.S. Charter 50
Illinois Association R.S.E.S. Officers and Board Meet 50
Massachusetts State Association Forms New England Group 52
Chapter Notes 54
New and Improved Appliances 60
News of the Industry 62


PEERLESS
AMERICA
MARION INDIANA
ARMY E NAVY
ARMY E NAVY
PEERLESS
of AMERICA Inc.
MARION ★ INDIANA
Refrigeration and Air Conditioning Heat Exchange Equipment
THE FINEST MADE!

Government Bureaus—News and Rulings

RULINGS and announcements issued by the various Government bureaus that are of special interest to the refrigeration service industries are summarized below. In most cases, the essential facts only are given and those who desire more complete or additional information on any of the rulings or announcements are advised to write to the proper Government agencies.

S S S

Supply of Motor Trucks Drastically Reduced

LESS than one fourth of the motor trucks estimated as needed to meet essential war and civilian transportation requirements during 1945 will be produced and distributed to commercial operators, the Office of Defense Transportation announced December 27. The estimate is based on the 1945 civilian truck program approved by the War Production Board.

Increased demands by the armed services for all types of motor transport was given as the chief reason for the severe reduction. The total authorized program amounts to 186,792 light, medium, light heavy and heavy trucks, or 24.1 per cent of the ODT stated requirement of 773,935 vehicles.

S S S

Fractional Horsepower Motors

DESPITE heavy military demand for fractional horsepower motors, some increase in output is making it possible for manufacturers to ship several thousands each month for the most essential farm and civilian replacement use, the War Production Board said December 18. Repair shop owners were advised by WPB to shop around for suppliers who can fill their orders, and to urge suppliers to file an application with WPB each month for allocation of small motors.

Repairmen needing small motors for replacement in refrigerators, commercial refrigeration systems, etc., should use the AA-3 rating assigned to them by Controlled Materials Plan Regulation 9A in placing orders with motor suppliers, WPB officials said. These suppliers include refrigeration or industrial machinery jobbers, electrical wholesalers, motor dealer agencies, factory branches, and mail order houses.

Civilian sale of fractional horsepower motors is restricted to the most essential uses, because of the relatively small number available for non-military purposes, WPB officials pointed out. Clarification of procedure to aid both repairmen and suppliers in obtaining small motors follows:

1—Suppliers who have fractional horsepower motors in stock are required to fill repair shop orders carrying AA-3 ratings if the motors are not needed to fill higher rated orders. The buyer, however, must meet the seller's regularly established prices and terms for sale.

2—Suppliers are not permitted to demand an old motor in exchange for a new one as part of the purchase price on orders with AA-3 ratings.

3—Motors may be sold only on rated orders, except when needed for replacement of disabled motors. In such cases, the old motor must be taken in exchange, repaired if practicable, and re-sold under similar conditions.

4—Suppliers who are regular sellers of fractional horsepower motors should file Form WPB-547 each month stating one month's requirements, instead of at irregular intervals. They will thus place themselves in a better position to obtain their share of the supply available for civilian use, since motors are allocated on a month to month basis. This is considered the best procedure for equitable distribution through jobbers and dealers.

5—Small motors are allocated and ratings for their purchase are assigned only to firms that have regularly carried such motors in stock.

S S S

War Production Comes First

TO CLARIFY current policy and to re-emphasize the urgency of war production and the fact that reconversion must not interfere with war production, a joint message to field representatives was issued December 1 by the War Production Board, the Army, the Navy, and the War Manpower Commission.

The document is essentially a re-statement of the original policy underlying Priorities

DETROIT PUBLIC LIBRARY

Regulation 25, emphasizing that war production must come first and that no authorization to produce less essential goods under Priorities Regulation 25 can be granted if the authorization will interfere with war production.

S S S

Wage or Salary Rate Increases

GENERAL Order No. 30 of the National War Labor Board has been amended to read as follows: "In accordance with the provisions of Section 4 of Title II of Executive Order 9,250, increases in wage or salary rates which do not bring such rates above 50 cents per hour may be made without the approval of the National War Labor Board. Increases above 40 cents per hour made hereunder may not, however, furnish a basis either to increase price ceilings of the commodity or service involved or to resist otherwise justified reductions in such price ceilings." The order was effective November 11.

S S S

Delivery of Materials Will Delay Ice Refrigerator Production

MEMBERS of the Domestic Ice Refrigeration Industry Advisory Committee at their recent meeting said that most of the manufacturers who may be authorized to make all-metal ice refrigerators will not be able to start production until the beginning of 1945, because of expected delays in delivery of needed materials, the War Production Board reported December 5.

Permission to manufacture all-metal ice refrigerators was granted by Limitation Order L-7-c, as amended November 20, 1944. Under the order, manufacturers who wish to make domestic ice refrigerators are required to apply to WPB for production quotas.

WPB officials emphasized that production of ice refrigerators would be permitted only to the extent that it will not interfere with the use of labor and facilities for war production. They also emphasized that the total amount of metal to be allocated per unit would not exceed 100 pounds.

S S S

Tire Allowances Reduced

PRESENT indications are that commercial motor vehicle operators will receive only about one-half of their estimated tire requirements during the first quarter of 1945, Col. J. Monroe Johnson, director of the Office of Defense Transportation, announced December 17. The urgent military demand for tires for combat vehicles, trucks, jeeps and other military transport was given as the reason for the drastic cut.

Commenting on the expected reduction, Colonel Johnson declared the tire situation "presents a challenge to all truck, bus and taxi operators to make the greatest effort possible to continue and to step up their tire conservation activities."

As claimant agency for essential commercial motor vehicle transportation, the ODT has requested 2,241,889 tires for new vehicle and replacement purposes for Janury, February and March, 1945. Current negotiations, Colonel Johnson said, indicate that the first quarter allocation may fall short of this figure by close to one million tires.

Colonel Johnson called upon commercial motor vehicle operators to conserve every ounce of usable rubber they now have, to retread and recap every usable tire carcass and to eliminate wear and tear and tire abuse wherever possible.

S S S

Civilian Items Held to 1944 Level

WAR Production Board programs for the manufacture of civilian items will, in general, restrict quantities to the level allowed during the fourth quarter of 1944, WPB announced December 16 in taking further action to prevent reconversion from interfering with production for military needs.

This restriction is one of several set up by a new WPB internal policy order issued to establish the level that civilian production will not be allowed to exceed. The order applies more to hard goods and end products than to soft goods, primary materials and components. Other points set forth in the order include:

1—Increases in programs will not be allowed in excess of the quantities clearly required to maintain essential war-supporting activity in the civilian economy and to fulfill essential export requirements.

2—If military requirements for items on the order's List A that are also programed for civilian production are decreased, no increase may be made in the level of production of that item for civilian use unless the area production urgency committee determines in each factory the fact that a decrease in total production would not release workers, either

(Continued on Page 46)

Predictions and Trends for 1945

UP UNTIL the last few weeks of 1944, it appeared that the refrigeration industry was justified in considering plans for reconversion. Recent developments have changed this picture until it now appears the all-out war effort is going to eclipse civilian production for some time to come.

Plans have been under consideration by the WPB for changes in order L-38. Proposed changes are: 1) Elimination of the use of MRO ratings for procuring condensing units; 2) Permitting unrated sales of equipment, manufactured under L-38 or spot authorization down to the dealer and only requiring ratings for sales to ultimate consumers; 3) Imposed restrictions on order L-38 on the use of CMP ratings for production of items covered by spot authorization priorities regulation No. 25. The General Refrigeration and Air Conditioning Equipment Industry Advisory Committee has indicated its opposition to these changes. Further conferences are likely to be held on the proposed WPB changes.

Of major concern to the Refrigeration Service Engineer is the proposed elimination of MRO form L-38. If this is done, replacement equipment cannot be purchased without specific priority rating being assigned.

The WPB has advised repair shop owners to contact as many suppliers of motors as possible to get their needed replacements. Suppliers in turn were urged to file an application with WPB each month for allocation of small motors. Service men needing small motors to be used for replacement in refrigerators, commercial units, coal stokers, oil burners, and washing machines are to use the AA-3 rating assigned to them by CMP regulation 9A in placing orders for fractional horsepower motors.

Suppliers who have small motors in stock are required to fill repair shop orders carrying AA-3 ratings if higher pirority orders are not being held. The buyer must meet the suppliers regular terms of sale and prices. Suppliers are restrained from demanding an old motor in exchange as part of the purchase price on orders bearing AA3 ratings.

Army and Navy requirements of Gray Iron Castings has resulted in a new schedule procedure to meet their demands. This may create a bottleneck in compressor manufacture if the foundries are supplying any items on the critical material list.

Allocation of Anhydrous Hydrofluoric Acid (HF) for the manufacture of F_2-12 has been in sufficient quantities to permit production of four million pounds. It is believed that all essential requirements for F-12 can be met at the present although the HF allotment for December was 834 tons against 850 tons for November. All due cautions should be observed by the refrigeration serviceman to prevent loss of F-12 in systems being shut down for any length of time. Testing for leak should be a regular routine job on all F-12 systems in order to preserve the normal operating supply of this refrigerant.

The manpower situation for civilian work is going to continue to get tighter. War work must of necessity come first. The Selective Service officials continue to class refrigeration men as "critical" workers and it is not expected that the review of classifications will affect men already engaged at their highest skill. Service companies may be able to get valuable help from local Veterans Bureau.

The President in his recent speech and message to Congress emphasized that war production must take precedence over all other work and indicated that much available manpower will be diverted to war production. In order to meet conditions which are developing, all refrigeration industry operators should re-examine their lists of deferred employees and make plans for the future. The chances are that they will lose nearly all of the 26-30 age group now deferred and a good percentage of the 30-38 age group in the next six months. Draft calls will be substantially increased each month during this period, according to present indications.

(Continued on page 62)

(Continued from December Issue)

Construction, Operation and Se

The Coldspo Ele

Here is the second article of a series giving detailed servicing instructions on Coldspot Electric Units, compiled by permission from the Service Manual issued by Sears Roebuck & Company, makers of the Coldspot Units. This is the first authorized publication of this material and will prove of inestimable value to the thousands of service engineers all over the country who daily come in contact with these refrigerators.

Rotating Seal

(Fig. 10 shows the part of the seal.) The outer end of the front bearing is finished in a narrow polished ring of bronze which forms the seal seat. The steel seal button is attached to a bellows, the opposite end of which is fastened to the end of the shaft. The seal button and bellows rotate with the shaft. The button is free to move lengthwise on the shaft and while the unit is running, it is held against the seal seat mainly by the pressure of a

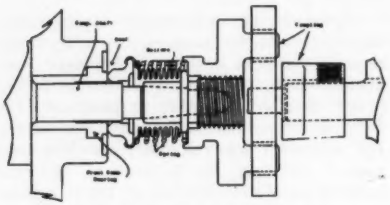


Fig. 10. Seal assembly

spring. The full head pressure within the bellows is added to the spring pressure to maintain positive sealing when the unit is idle. On some older models this spring is located inside of the bellows (see Fig. 11). Newer models have a bellows of smaller diameter and the spring slips over the outside of the bellows (see Fig. 12). In either case, the spring is between the seal button and the enlarged hub on the end of the shaft.

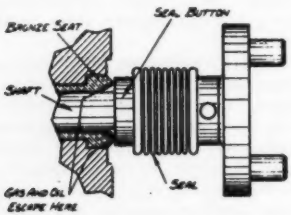


Fig. 11. Internal seal spring.

The tension of the seal spring is intended to offset the action of atmospheric pressure on the bellows. This is necessary because while the compressor is running, a reduced pressure is created within the bellows and atmospheric pressure would cause the bellows to collapse, withdrawing the seal button from the seal seat, thereby allowing air to be drawn into the system. If a spring with excessive tension is used, the increased friction of the seal surfaces will cause an increase in power consumption.

Service

Service on the compressor is limited by the policy of Sears, which prohibits opening of the compressor or any part of the gas system within the guarantee period.

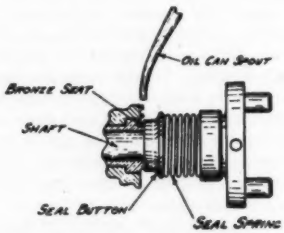


Fig. 12. Oiling the seal

Service on a compressor becomes a matter of simple tests and correction methods applied to the assembled unit.

Compressor troubles may be any one or a combination of the following:

...and Servicing ...dspot Electric Refrigerator

Noise.
Failure to pump.
Running tight.
Leaking check valve.
Seal leak.

Noise: "Noise" is a comparative term in its usual sense. We know that any moving object creates a sound but this sound is not called "noise" unless it becomes excessive or annoying.

A normal compressor under normal conditions creates a sound which is not objectionable when it is operating in the proper cabinet with other factors considered.

Before proceeding with any correction for noise, one should be certain of the source of the noise. It is easy to confuse noisy motor bearings, noisy drive washer, fan vibration, or the noise of distorted mounting springs with compressor noise and, of course, no amount of work on the compressor will eliminate these other noises.

A certain amount of noise always accompanies operation of the unit in a cold room or *when the unit is first started after an idle period of several days.* This is due to the liquefaction of gas within the cold compressor dome. The accumulation of liquid gas in the dome floats the oil supply above the oil outlet and, thus, reduces the circulation of oil to the compressor. This will not necessarily decrease the life of the compressor but merely indicates that the full supply of oil to the compressor is reduced to the extent that some of the "cushioning effect" is lost. The only possible correction is to place the Coldspot in a room temperature of 70°F., or above. For test, see paragraph on "Shortage of Oil."

Compressor noise will result from:
1. Improper expansion valve adjustment.
2. Expansion valve stuck open.
3. Stuck blades.
4. Shortage of oil—displaced oil.
5. Dry seal squeak.

1. Improper Expansion Valve Adjustment

If the expansion valve is adjusted to open too easily, too much liquid refrigerant will enter the evaporator and because it cannot boil rapidly enough will be drawn into the pump while in a liquid state.

The correction for this noise is proper adjustment of the expansion valve as explained in another part of this series.

2. Expansion Valve Stuck Open

It is obvious that if the expansion valve were properly adjusted, but was stuck in an open position or leaked during the "off" cycle, the evaporator and compressor would be flooded with liquid refrigerant and noise may result.

The correction is to flush and readjust the expansion valve which will be explained under the heading "Flushing Expansion Valve."

3. Stuck Blades

Noise may result from sticky blades as the result of moisture having entered the system. It may be assumed that if all tests and corrective procedure are applied and blade noise still continues that the blades are too tight (sticky) and that the unit must be sent to an authorized Service Shop for repair.

4. Shortage of Oil

Noisy compressors due to shortage of oil are easily diagnosed incorrectly, therefore, it is imperative that the lubrication system of the Coldspot be well understood before reading further. It must also be remembered that liquid SO_2 is heavier than oil and, therefore, oil will float when the two are together in one container such as the receiver or compressor dome.

With this in mind the tests for shortage of oil can be made. *True shortage of oil can only exist if oil has leaked from the unit.* Oil may become displaced from the compressor or be floated above the normal oil level and have the same effect on operation as does true shortage of oil. For this reason, any unit which operates as though it were short of oil should be first treated as though it had liquid SO_2 in the dome and also as if it has displaced oil. Tests are divided into the two age groups of units.

Those built prior to 1936, and those built in 1936 and later.

Units built prior to 1936 but which have been repaired at the factory since 1936 will have the latest type oil screen and short oil outlet, if the compressor was rebuilt during the repair. Therefore, any old model repaired unit should be handled like a late model in the testing operations described below.

Test For Shortage of oil: On units built prior to 1936, if the oil level falls below the end of the tube leading to the oil cooling coil, the compressor will have a blade noise until the *condenser* end of the unit is raised. Raising the condenser end allows the oil to flow to the end of the dome and cover the end of the oil outlet tube (see Fig. 13), thereby, supplying the compressor with oil. It will run quietly in the raised position and become noisy within a few seconds after being lowered. *This is the test for shortage or displacement of oil in the compressor of units built prior to 1936.*

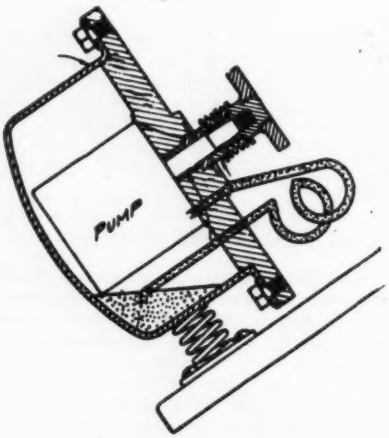


Fig. 13. Tipping the compressor

On units built in 1936 and later, the oil tube was changed to a screen with its opening near the front head and it is necessary to lift the *compressor* end of the unit to test for shortage of oil, Fig. 14.

Test for displaced oil: Bearing in mind that if refrigerant condenses in the compressor dome, the oil will float on top of the refrigerant, it is evident that if tests for shortage of oil fail to indicate shortage, the

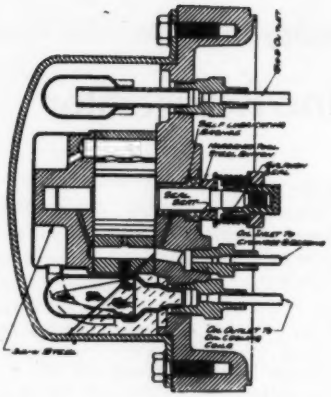


Fig. 14. 1936 and later units

next step is to test for presence of liquid refrigerant in the dome. This test is made by tipping the unit in the opposite way from that just described. For old units, lift the compressor end; and for 1936 and later models, lift the condenser end.

The effect of this treatment is shown in Fig. 15 for the old units, and Fig. 16 for newer units. When tipping units, it is necessary to hold them at about a 30-degree angle for one or two minutes, because it takes some time for the pump to fill the oil cooling coil with oil and this must be done before the pump can get oil. *THE REACTION TO THE TEST IS NOT INSTANTANEOUS.*

The recommended oil for use in Coldspot units is Argon Ice Machine Oil, Spec. (containing rust inhibitor) with a viscosity of 310. The unit is charged with 16 ounces of oil at the factory.

If the unit is out of the cabinet, a sure test for liquid refrigerant in the dome is to apply heat to the bottom of the end of the dome by means of a blow torch. This must be very carefully done to avoid overheating. Proceed as follow: Touch the lower part of the dome with the bare hand to become accustomed to its temperature. Then heat for a few seconds with a torch and again feel with the hand to note the temperature change. If there is liquid SO_2 in the dome, it will hold its original temperature at the bottom while the part above the liquid level will warm up from the heat of the torch. When all of the liquid refrigerant has been evaporated, the bottom of the dome will warm up

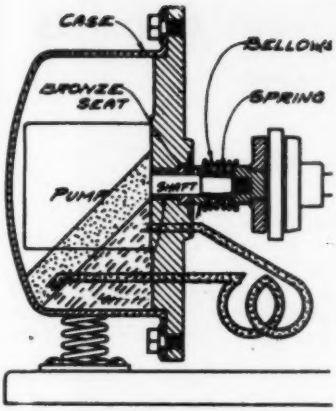


Fig. 15. Tipping older units

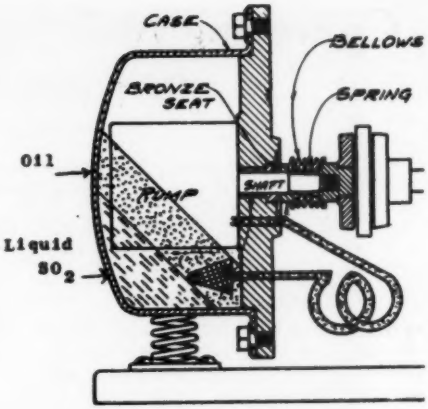


Fig. 16. Tipping 1936 and later units

rapidly. *The dome should never be heated sufficiently to become uncomfortable to the touch.* After liquid has been removed from the dome with the aid of a torch, the expansion valve adjustment should be checked and the unit should be given a complete check as outlined under "Service Procedure." Once correctly adjusted and operating in a room temperature above 70°F., there is little likelihood of the flooded condition returning.

If noise continues through the tests just mentioned and it has been established beyond doubt that the noise is in the compressor, before concluding that blades are sticking, it is good practice to check the temperature of the oil cooling coil by feeling it with the hand. The oil cooling coil should be as warm as the compressor when the unit is running. If the coil is noticeably cooler than the compressor, it is probable that there is a restriction in the oil line or a plugged oil screen. It is sometimes possible to dislodge obstructions by dumping the receiver and pumping the refrigerant around through the system as described under "Dumping Receiver."

5. Seal Squeak

Seal squeak is an infrequent source of noise in the compressor. As explained previously, the seal is given extra lubricant each time the unit stops and it follows naturally that if a unit operates for a long time without stopping, the seal may run dry of oil and cause a squeak. Stopping and starting the unit several times at intervals of 10 or 15 seconds and oiling the seal with light mineral oil will usually correct the trouble (see Fig. 12).

Failure to Pump: Failure to pump must not be confused with shortage of refrigerant, or with expansion valve stuck, either closed or wide open. The result in any case is a lack of refrigeration and it is necessary to analyze the trouble more completely before deciding upon the correct procedure.

If the unit spins freely, it may be very short of gas or all of the blades may be stuck in the slots of the rotor. Which of these is the cause of failure to refrigerate can be determined by opening the expansion valve with the motor shut off. If there is a shortage of gas, there will be little or no sound at the valve. If there is a normal dumping of the receiver (45 seconds to 1 minute) sufficient gas is present but the blades are stuck. It may be possible to release the blades by a combination of dumping the receiver and heating the compressor. It is more probable that the unit will have to be returned to the factory.

Failure to pump may result from insufficient lubrication, in which case, the unit will be noisy and should be handled as described under "Noise".

Running Tight: Tight running compressors may result from lack of lubrication, overheating, or from small particles of corrosion scale becoming lodged in the rotor. If the compressor is unusually hard to turn by hand when it is cool, the trouble is probably due to particles lodged in the rotor

(Continued on Page 62)

Converting Mills Ice Cream Cabinets to Farm Freezers

By L. K. Wright

Chief Engineer, Frosted Food Cabinet Corporation
New York City

(Continued from December Issue)

Temperature Control

THIS control has a temperature spread of —22° to + 40° F. and will maintain any given temperature within this range, depending upon the indicator position. (See diagram-panel in Cabinet.) The temperature control has a series of numbers ranging from 1 to 18. Inspection of this control will reveal there are 10 little windows. Numbers 1 to 9 will be black, with one window blank, the blank window being the one before the 1. A complete revolution of the dial, that is when it is turned beyond the 9, the blank window will become 10 while the other windows will show values in red 10 points higher than the previous black figures, viz.; 1 will become 11, 2 will become 12, etc. The black 9 window will turn to blank, 18 being the highest number. No. 1 is the +40° F. setting and No. 18 the lowest setting, is —22° F. To lower the temperature of the cabinet, turn the indicator to a higher or greater number. The arrow on the dial indicates the direction for colder temperature, so one cannot go wrong if reference is made to the directional arrow when setting the dial.

The capillary tube runs from the thermostat (temperature control) to the third compartment, so that the bulb at the end is exposed to the temperature condition of this compartment. The capillary tube itself must not contact the cooling coil. To prevent this it is insulated from the coil where it runs through the coil compartment by a sponge rubber sleeve. If the rubber has become water soaked or friable, erratic operation will result. The bulb end is the part which is expected to give the thermostat its control.

Defrost Switch

When the defrost switch is operated it serves to close the solenoid valve located in the liquid line. The low side will be reduced in back pressure and the low pressure control will automatically stop the compressor. The blower will continue to operate and if the lids be raised or removed (depending on cabinet top) the frost will be melted off the coils.

To defrost the coil bank thoroughly, remove all food and place in the center of a blanket. With all food on blanket, cover it with remaining edges of blanket or other pieces of cloth or even paper. The food will not be injured in any way if defrosting is then attended to promptly, and the food can be returned to the cabinet with very little rise in temperature.

Meltage can be removed by lifting the rubber plugs out of the drain holes and allowing the water to run into a pan. Impress the owner about the necessity of replacing the plugs after draining. Defrosting is not a lengthy process, unless a considerable quantity of ice and frost has been allowed to accumulate. Thus, under proper conditions, the food can be placed back in the freezer before it has time to warm up. Of course, if another cabinet is on hand it can be used to hold the food while the other cabinet is being defrosted. In that way there will be no warming up of food at all. Another method is to buy about five pounds of dry ice, crack it into small pieces and and scatter over the top of the heap of food and then apply the layer of blankets or cloths.

Time for Defrosting

Defrost the cabinet as soon as frost builds up appreciably. Do not allow frost to build up in excess of 3/8ths of an inch as the evaporator consists of a coil of closely wound bare copper tube and frost on this tube surface not only cuts down heat flow to the refrigerant but intereferes with air flow. Proper freezer temperatures cannot be held if ice or frost builds up on the evaporator surface.

During the summer months, when the at-

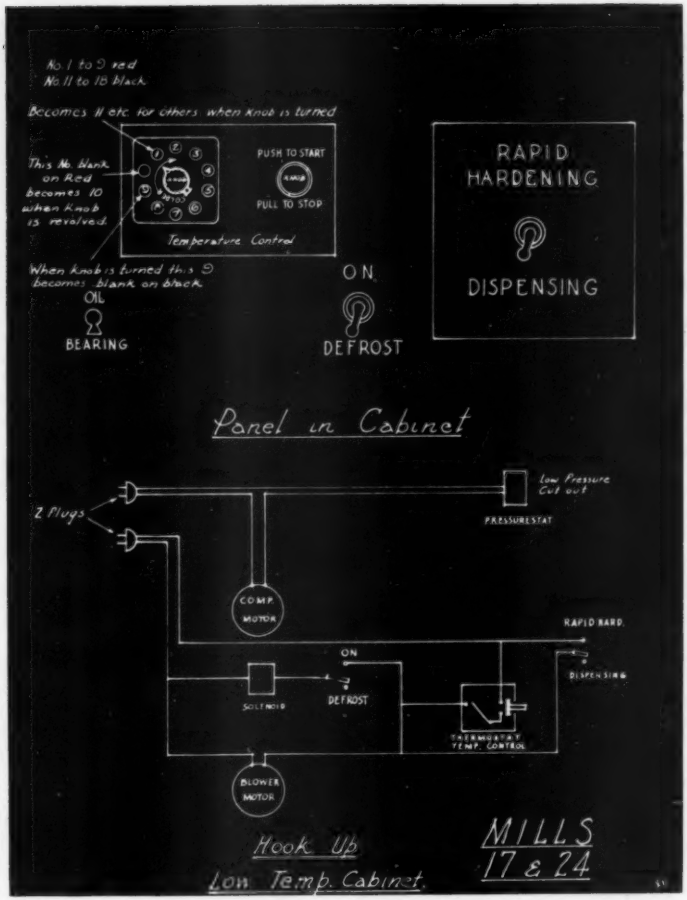


Diagram Showing Lay-out of Control Panel Located in the High Temperature Chamber

mosphere contains a great deal of moisture, or where improper or improvised food wrappers have been used, or again on jobs where the freezer lids are opened frequently, it may be necessary to defrost once a week. No set time for defrosting can be given; as frost accumulation depends upon the season of the year, geographic location, use, kind and type of food, the food wrapper or container, and the way in which the food was wrapped.

To speed up defrosting, especially where the frost has been converted to hard ice, flush the coils with tap water, using a small rubber hose. Do not use hot water for this. Such a procedure would raise the pressure in the low side. Using tap water removes the ice and frost quickly and also washes the coils, removing food odors and bacterial deposits originally removed from the circulating air and collected on the coil surface.

Defrost Procedure

Set the "Defrost Switch" to the defrost position. Turn "Rapid Hardening Switch" up to rapid hardening position, or turn the temperature control to position 18. Doing

either of these will cause the low side to be pumped down and as gas pressure develops the high side will start and pull down the pressure, thus keeping low side under a vacuum. The stored goods are taken care of in any of the methods previously outlined. The inner and outer lids are removed.

Check up on the position of the blower shutters and make a note of the different openings so the shutters can be reset to their proper respective positions later. Open all shutters wide. Allow to defrost or use tap water to speed up the process. Pull rubber plugs from drains and place pans to catch defrost water.

After defrosting, mop up all water and dry the interior of the compartments. Replace the rubber plug; reset the shutters to the original positions. Set defrost switch back to the "On" position. Food may be returned to the compartments and the lids replaced. After the freezer pulls down to the desired temperature, turn the rapid hardening switch to dispensing position and regulate the temperature control to give the desired temperature.

For Super or Rapid Freezing

For lowest temperatures and, of course, fastest freezing, turn the switch up to the "Rapid Hardening" or fast freezing position. Leave the blower shutters fully open. When the food is frozen the switch can be turned to the "Dispensing Position" or holding temperature. If it be desired that some compartments be of higher temperatures than others, leave the switch in the rapid hardening position and regulate the shutters to get the desired temperature in the individual sections. Bear in mind the compartment wherein the thermostat bulb is located in the control section and it, therefore should be the one chosen as the coldest compartment.

For Fast Freezing and Normal Holding at Same Time

Place the food to be frozen in one compartment and have all other frozen products in the other compartments. Turn the rapid hardening switch up to the "Rapid Hardening" position. Open the blower shutters fully in the compartment where rapid hardening is desired. Regulate the blower shutters in the other compartments where the normal freezer temperatures are to be held. For fastest freezing, put the food in the compartment having the thermostat bulb. Again, this compartment is an inner one and has less exposed wall surface, therefore has less heat flow through the walls and more refrigeration effect for the freezing of food.

At the end of the rapid freezing period for the one compartment, turn the rapid hardening switch down to "Dispensing" position and open the blower shutters.

For Regular Operation

With all foods frozen and where regular holding temperatures are desired, set the temperature control pointer to give the desired temperature. Use thermometers in the compartments for accurate determination of temperature. Some models have compartment temperature dials. Rapid hardening switch must be set for dispensing. For the same temperature in individual compartments leave the blower shutters fully opened. For different temperatures in individual compartments regulate the blower shutters. Set temperature control pointer for coldest temperature and regulate other blower shutters. The thermostat bulb is in the third compartment and this compartment should be selected as the lowest temperature.

Low Pressure Cut-Out

The low pressure switch, in most cases, is connected to the compressor crankcase. If connected to a tee inserted in the suction service valve, at the service port, make sure the valve is sufficiently off its back seat so the pressurestat can react properly to the pressure changes.

For methyl chloride systems, have the cut-out set for 15 inches of vacuum, while on F-12 cabinets, the cut-out should be set for 10 or 11 inches.

Heat Exchanger

Many rebuilt cabinets do not have a heat exchanger; those of better workmanship will have either a heat exchanger unit consisting of a tube of large diameter, with a coiled or finned arrangement within, or else a suction line section which has a ¼ inch copper line inserted in it. The heat exchanger will be found in the machine compartment and usually extends to and through the blower section. For best operation, have the ⅝th inch flare nut, where the line comes out of the refrigerator wall, frosted or even slightly beyond this point. Adjust the expansion valve for this.

(Continued on Page 46)

So You Want to Get Into Business for Yourself!

By Paul B. Reed

Chairman, Wartime Educational Committee, R.S.E.S.

Mgr. Refrigeration Div., Perfex Corp'n.

ARTICLE III

Views on Selling

MANY refrigeration service engineers, army, navy or civilian, are today asking themselves "After the war, shall I stay in refrigeration service only, or shall I shift over to selling?" They are intrigued with the "big money" to be made in sales, the easier life—practically no work to it, you know—the shorter hours. The grass on that side of the fence certainly appears to have a much more greenish hue. Before he sells all his tools and burns his greasy work clothes it might be well for the service engineer to examine the matter rather closely for he must remember, that before the war, the woods were full of salesmen who were barely two steps ahead of the bill collectors and three weeks behind in their rent.

First, the service engineer must decide the question "Can I sell?" In normal times, selling doesn't consist in exposing one-self to a hungry mob of buy-crazy people with plenty of money just waiting to grab the equipment up. Selling is a profession, an art even. It isn't a God-sent gift that one is born with all fully developed. True, some men have greater aptitude for it than others; learning how to sell comes easy to them and they soon become highly proficient. Others just "weren't cut-out" for selling. Nor is selling easy; it requires plenty of work, not the kind of work that puts callouses on their hands, but it is hard work nevertheless.

A service engineer wouldn't expect to suddently become a plumber nor would be expect a salesman to suddenly become a good service engineer. No more should be himself expect to acquire, overnight the skill and technique of selling that will enable him to go out into the highly competitive post-war era and get the business away from experienced salesmen.

He can *become* a salesman but to be a successful one, he must serve an apprenticeship; he must work for a long while for little pay, just as other apprentices do, he must study the job and work hard and long. For some the apprenticeship will be comparatively short and relatively easy. They had a "knack" for it. Others may never get the knack, can never become good salesmen.

Ups and Downs of Selling

Moreover, selling is likely to be "feast or famine." There will be times when business seems to fall in the salesman's lap with little or no effort on his part; he makes a very high income, perhaps as much in a week as the service engineer makes in a month. That's the side of selling the service engineer sees. But does he see the other side, the long discouraging weeks when, try as he may, work as hard as he can, he walks the streets without getting an order? No income at all for weeks at a time, or at best a small drawing account to tide him over such periods. In slack times, depressions, the salesman is the first and hardest one hit. He may even have to take cover until better times return and weather the storm as an elevator operator or soda jerker. During such times when he does need a job, they are the scarcest and competition for them is the fiercest. No, selling is not all "beer and skittles."

But the man who follows selling as any other profession, and not as an easy-money way of avoiding physical work, who studies his work, who plans ahead, who banks his

money in lush times against the seven lean years and who builds up a clientele, can make his job pleasant, interesting and profitable.

Service or Merchandising

The service engineer about to go into business for himself can either make it principally a merchandising business—a dealership; selling one or more of such items as domestic refrigerators, home and/or farm freezers, commercial fixtures, milk-coolers, water-coolers, etc. with service secondary, an aid to merchandising, or he may make it a straight service company that will make little or no attempt to sell other than parts and installation and service material or an occasional replacement condensing unit or coil. If he decides against becoming a dealer and chooses to operate a service company, his organization and financing problems are much more simple as compared to the dealership.

Sales Requirements

A dealership is a selling business and cannot be successfully operated on a hit-or-miss basis. The service engineer cannot be salesman-serviceman at one and the same time and do either job justice. True, he can occasionally grab off a sale for a refrigerator, a freezer or a commercial installation. But the chances are, that knowing little about selling or sales costs he will give away most of his profit and finally wind up with less money than if he had given his full time and energy to his service business. This doesn't mean that a service engineer can't run a merchandising business and a service business at the same time and under the same roof. Certainly he can and in fact, it is almost a "must" for a dealer to have a service department but the two activities, sales and service on other products and installations besides the ones he sells, must be kept separate to the extent that as a regular thing a service engineer cannot successfully spend part of the hours of the day servicing and attempt to sandwich in some sales calls.

The dealership must have at least one man whose entire time is devoted to selling, who will keep after the prospects constantly and keep plugging. The dealership must have a nice-appearing salesroom where the merchandise is attractively dislayed and where the prospects may comfortably see and inspect them. The dealership must have a finance plan so that the equipment can be sold on a time-payment basis, that is, it must have proper bank or finance company connections where the dealer may discount his "paper." The dealership must have francises or agreements with manufacturers or distributors who can assure him of the availability to him of the merchandise he sells and who will lend him help and guidance where needed. And, of course, the dealership must engage in a systematic and continuous advertising program, more elaborate and more expensive than that of the service company.

Selecting the Location

The location of a dealership is much more important than that of a service company. A dealership does not have to be up-town next to Woolworths, but it should be in a business district where window displays can catch the attention of shoppers and passers-by. It can be on a reputable side street that has considerable foot traffic, or even in a lively neighborhood shopping district, which in the larger cities are little "downtowns" in themselves, equal to the main shopping districts of smaller cities.

The service company depends very much less on location except that it should be in the approximate center of the area serviced so as to avoid lost time and excessive driving out to the jobs. The service company depends very little on getting business from passers-by; most calls come in by telephone anyway. In fact, many successful service companies employing several service engineers, work from the basement in the owner's home or from his garage. A service engineer who intends to go into the service business only, on a modest scale; doing most of the service work himself with perhaps an apprentice helper, will find that, in most cases, he will get along quite well working from his home, rather than to burden a small income with rental on a place of business which will, after all, be mostly a telephone, a store-room and a work-shop. Moreover, he will need to have someone to answer the phone, take the calls and relay them to him when he calls in, keep his records and send out bills or at least, help in this work. In small operations, the wife frequently does these things for the business and she can do them at home just as well and more conveniently at home than at a store. So it is usually advisable for the service company to operate from the home until it gets big

enough that more room and more facilities are required.

Where to locate, in a big city, in a small town, in the north or in the south, in the east or in the west? Obviously there cannot be any specific answers to these questions, except that it is preferable to locate in the type of community that you know best and wherever your services are the most needed. "He who serves best, profits most" is more than a motto, it is a sound rule of business. If you do your work well, treat your customers fairly and give generously of your time and talents to your community you will come out all right in the long run. This applies equally to a dealership or a service company.

Advantage of Contacts

As mentioned before, the service engineer has been the only one in the industry who has been in close contact with users. He knows what they need, what they are thinking of buying and about what they are willing and can afford to pay. Even though he may not be an experienced salesman he stands in the best position to grab off the first sales of equipment when, in post-war, it again becomes available. He is in a fine position to do this, to skim the cream, to get this quick business before the selling industry gets reorganized and the new crop of dealers find the prospects.

This enables the now-active service engineer who wishes to establish a dealership, to get a good start. He must prepare soon however, to line up with some good manufacture or distributors so that he will have something to sell. However, he must be careful that he gets lined up with the right companies, those who will be among the early birds in getting back into civilian production. Also he should make some arrangements with a bank or finance company for he will have to sell much and probably most of the equipment or appliances on a time-payment basis.

Competitive Selling

But, he must remember that it is only a beginning and that only in the early days of post-war will he have this advantage. Before long he will run out of his quick prospects. He must then go to the old tried-and-true, hard-way methods of getting prospects, advertising, telephone canvass, door-bell ringing, leg-work. Then it won't be so easy and then he will be in competition with old experienced dealers and their salesmen. Then he will have to do *merchandising*. But by then, he will have gained some experience, he will have made some money so that he can afford to put some of it back into the business—increased stock if necessary, a little nicer showroom, some more advertising.

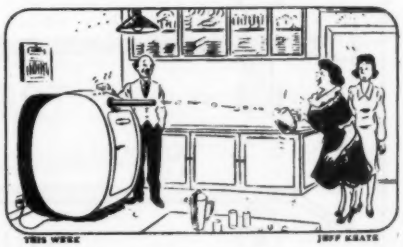
All this time, he must not have allowed his service business to suffer. It is his bread and butter, his back-log. Besides, he must have it to assure continued customer satisfaction with the products he sells and to protect his good reputation which is his greatest asset.

Above all, he must keep his finances in proper balance, and it is those finances both for a dealership and for a service company, that will be covered in the succeeding article.

UNIVERSITY OFFERS EXTENSION COURSE IN COMMERCIAL REFRIGERATION

A COURSE in commercial refrigeration, under auspices of the University Extension Division, Massachusetts Department of Education, began January 15 at the Boston Teachers' College, Boston, with C. Wesley Nelson as instructor. Mr. Nelson is instructor in mechanical engineering at Wentworth Institute, Boston. The course comprises twelve lectures at a nominal fee.

Subjects treated are commercial installations; mechanical and electrical controls; water coolers, ice cream coolers, beer coolers, high humidity coolers; service complaints; trouble shooting, diagnosis and correction; also value of insulating materials; humidity and its effects; selection and proper layout of various compressors and evaporators for all types of installations. The course will be illustrated throughout with lantern slides and colored charts. Problems will also be worked out.



"The refrigerator people used to make tanks."

SERVICE POINTERS

Practical Solutions of Your Service Problems

EDITOR'S NOTE: Here are additional contributions submitted in the Service Pointers Contest. Others will appear in the next and following issues.

PREVENTING VALVE FREEZE-UP WHILE REMOVING MOISTURE

I HAD occasion to service a water-cooled unit that had a ruptured water coil in the condenser-receiver. The unit had been disconnected by cutting the liquid and suction lines and allowing the refrigerant to freeze the water coil in the receiver.

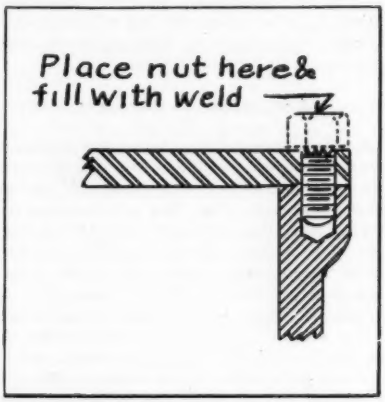
Moisture was distributed throughout the system before I was aware of the damaged condenser. It would have been difficult to replace the tubing. The condenser was repaired and the tubing was blown out, then a dryer was installed on the liquid line.

After a few minutes of operation, the expansion valve would freeze up. Heating the valve each time would put it back in operation. The only hope of drying the system was to keep the valve from freezing.

I hooked up two 150 W reflector lamps and directed the lights on the expansion valve. The heat prevented the valve from freezing and permitted circulation of the refrigerant through the dryer. It required three dryers and a week's operation before the system was completely dry. It has now operated several months without any trouble. This method seemed to be the most simple and economical way to overcome a bad situation. *Submitted by G. Sterling Graves, Brooklyn, N. Y.*

REMOVING BROKEN CAP SCREWS

A SURE way of removing a cap screw that has had the head broken off is to place a nut of the same thread size over the end of the screw and electric weld the



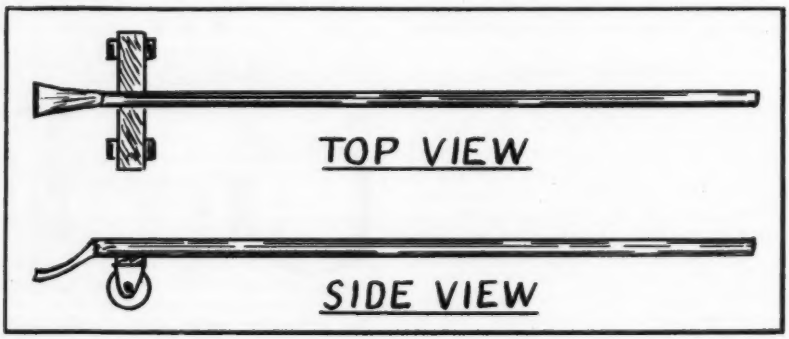
two together. After the weld cools, the screw can be removed in the regular manner. *Submitted by Jas. Meadows, Natchez, Miss.*

* * *

ROLLER BAR FOR HEAVY MOVING

A VERY handy bar for moving meat cases, coolers, large units, and other heavy equipment can be made from material obtained from the local junk yard.

The roller bar can be made of an old automobile drive shaft, two new or used heavy

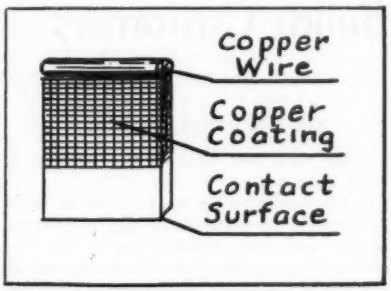


casters such as are on the old B-9 Frigidaire Cabinets, and a piece of ½ x 2 x 10 in. cold rolled strip (a section of wagon wheel tire will do).

Heat the end of the drive shaft and flatten. Curl the end up slightly to give it a grip. Bend the bar about 3 in. from the end (more if larger casters are used) then weld the strip to the bar about 3 in. back from the bend. To each end of the 10 in. strip a caster is welded in such a manner that the wheels will not swivel. *Submitted by H. H. Bender, Carrolltown, Pa.*

S S S

COPPER coated motor brushes that have worn too short can still be made to serve when new brushes are not immediately available. This can be done by soldering a piece of heavy copper wire across the end of the brush.



The wire should be as large in diameter as the minimum brush thickness to lengthen the brush as much as possible.

This idea has put many R. I. motors back in service without delay. The method described here is only good on brushes that have a copper coated back end as illustrated here. *Submitted by Sam Fiorino, DuQuoin, Illinois.*

S S S

I AM stationed at a Naval Air Station as a member of ship's company in the capacity of Machinist Mate, refrigeration specialist. We discovered the thermostatic expansion valve on our one-ton ice making plant had lost the power element charge. Supply houses in our vicinity did not have a suitable valve, therefore, we had to improvise by cutting the capillary tube and brazing a ¼ in. tube to it. We then supplied pressure to the valve diaphragm from our 50 lb. air service.

An automatic expansion valve was installed for pressure reducing purposes and a gauge was inserted in the line between the automatic valve and the diaphragm of the T. E. V. A service drum containing refrigerant could be used or pressure could be supplied by a hand pump. The automatic expansion valve could also be supplanted by a regular hand shut-off valve.

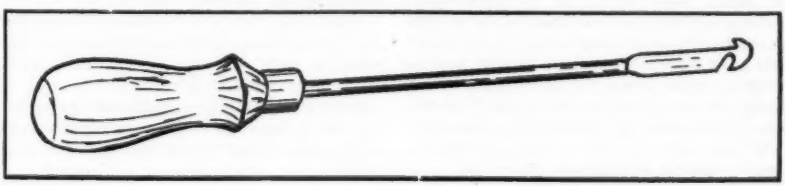
Pressure on the valve diahragm must be sufficient to open the T. E. V. against refrigerant pressure in the system low side. As the coils become completely flooded, the pressure must be reduced to prevent frosting back to the compressor. *Submitted by Norman L. Sulenes, MM(R) 1/C, Minneapolis, Minn.*

S S S

A VERY useful tool for hooking and unhooking small coil springs can be made from a piece of core wire from a scrap of A. C. S. R. Aluminum conductor wire obtained from the local electric utility company. This material is almost like spring steel and can be dressed quite thin without breaking. Similar material such as drill rod can be used.

The tool is made by cutting a piece 8 in. long and flattening it for about three quarters of an inch on one end. On this end a notch is cut with a fine tooth hacksaw. On the opposite edge of the same end, a deep hook is cut. The flattened part is then dressed with a file. The other end is sharpened and inserted into a file handle.

This makes a versatile tool for removing broken and replacing motor governor springs without having to disassemble the motor *Submitted by F. F. Schmidt, Okanogan, Washington.*



A Commercial Job in the Ruxton shop, showing how the box is completely stripped for rebuilding

Selling "Rebuilds" Builds Customers

ONE of the most effective selling jobs in refrigeration repair work is being carried on by Ruxton's Refrigeration of Yakima, Washington. Ruxton's repair, not only immediate refrigerator damage, but try to SELL the customer on a *complete overhaul job* thereby providing the owner with what amounts to practically a new refrigerator at a fraction of the cost of a new one which now, of course, is unavailable. An interior view of the shop is shown on the front cover of this issue.

According to Ruxton's, a repair job comes into the shop and they can go to work and do the repair work necessary but, unless they can tear down the unit and see what trouble may be brewing beneath the visible surface, the machine may develop trouble a short time after its return. In which case, the owner calls the shop and berates the firm on its incompetence.

This progressive firm has found an effective method of putting "blacker" figures on the ledger book while, at the same time, building up customer satisfaction. They call the customer, explaining in detail just what their plan is, and how future trouble may be avoided, emphasizing the fact that a practically new refrigerator may be had for $70, $90, or whatever the estimate on the complete job may be. The report is that the plan is making satisfactory progress.

Steps in Rebuild Procedure

Four steps are involved in Ruxton's rebuild procedure:

1. Check the refrigerator. Find out what condition the machine is in. 2. The customer is then consulted and told exactly the condition of his machine, what to expect regarding future operation in its present condition, and the price for all necessary and proposed repair work. In this way, misunderstanding with the customer is avoided. Careful attention to details makes it possible for the customer to thoroughly understand everything before any work is begun.

3. The condition of the box itself is the determining factor as to whether the work will proceed or not. Ruxton's make sure that the box itself merits a complete rebuild of refrigeration equipment.

4. If the work proceeds, all parts are thoroughly cleaned and inspected. When parts are reassembled after repair, the unit is baked to get all the moisture out.

The same procedure is followed with commercial equipment, although the bulk of work done is with domestic units. The rebuild work means the keeping of commercial and domestic refrigeration equipment going during these days of wartime emergency, when few or no new refrigeration units are available.

Result of Plan

The result of this plan, from the shop standpoint, is fourfold. 1. Ruxton's find it impossible to turn out all the available repair work. Under the selling plan they can maintain a comprehensive volume of repair work flowing from the shop. 2. More effective work can be turned out. 3. Through use of the selling plan, the routine of the shop work tends to be more efficient. The mechanics know just what specific jobs are to be worked on and they know just what to do. 4. Equally as important from the standpoint of customer good will is the fact that, should the owner call at any time for service work, the mechanic who did the work on the job is familiar with that particular machine and is enabled to do better and quicker service work.

All available new parts are used in Ruxton's Rebuilding jobs and all work is guaranteed.

According to C. Ruxton, owner, the best policy, found under existing conditions where so many refrigerators enter the shop for repair, is to completely overhaul 90 per cent of old model refrigerators for best assurance of operation for a reasonable length of time. If only the damaged part itself is replaced, the customer may come back in a short while for the repair of some other part that was weak at the time of the original repair job. The reducing of call-backs to a minimum, results in saving time for both the firm and its customers.

"The value derived from the rebuild program," says Mr. Ruxton, "lies in the fact that we have a complete knowledge of the refrigerator's condition so that, in case we do have a call back, we need but refer to a record on any particular job which is kept on file in the office. In fact," adds Ruxton, "we are the only refrigeration sales and service concern in Yakima that keeps a five-year back record of every commercial and household repair job. This means office efficiency at a maximum as we know exactly what we are talking about at all times."

Postwar plans for Ruxton's Refrigeration calls for showroom modernization with the area divided equally between domestic and commercial refrigeration and an expert in each line in charge of each department.

S S S

Herbert H. Turner and John Kiel are conducting business under the name of K. & T. Refrigeration Service at 4308 North Figueroa street, Los Angeles, Calif.

REFRIGERATION MECHANIC TELLS ABOUT SERVICE OVERSEAS

"WHEN I was called upon to repair Lt. General Mark Clark's icebox in Italy, I considered it merely a part of my routine job."

So says Sergeant George L. Fox, who served as a Quartermaster refrigeration mechanic in the Mediterranean war area from January 1943 until April of this year. While there he and his fellow mechanics repaired all types of refrigeration equipment from portable warehouses to giant 10-ton refrigeration trailers.

Sergeant Fox, now back as an instructor at the Quartermaster Refrigeration School of Camp Lee's Army Service Forces Training Center, was a member of the first QM refrigeration unit to be organized by the U. S. Army. The unit was set up at Camp Shelby, Miss., and trained there, prior to coming to Camp Lee in October 1941 for further instruction.

Personnel and Equipment

The unit consisted of four officers and 103 enlisted men, together with necessary equipment, including 30 mobile refrigeration trailers. Some of the trailers were maintained at a temperature of 35° F. for the preservation of vegetables, while others were kept at 20° F. for storing frozen items. Still others were used as storage warehouses for anti-toxins used by the Medical Corps.

The outfit arrived in North Africa at Oran in January 1943. While in Africa it operated in four sections—at Casablanca, Constantine, Oran, and Mateur. Work was constant, distributing perishables to various elements of the Seventh Army throughout the country.

In the Italian campaign, one platoon landed in September 1943 and the other three arrived in the following February. One unit set up in Naples, while others followed the Allied forces as they advanced up the peninsula.

Sergeant Fox stayed with the unit located at Naples, where he did maintenance work on the mobile and fixed refrigeration equipment that was brought in. He reports that there was considerable trouble caused by lines breaking on the trailer vans, with a resulting loss of Freon. The lines would break usually at the point where they were connected with the cold plate. The mechanics solved the trouble by soldering the connections.

(Continued on page 62)

QUESTIONS AND ANSWERS

On Problems of Servicing, Installation and Maintenance of Household and Commercial Refrigerating Equipment—Send Your Problems to the Question Box.

COMMENTS ON QUESTION 629

In the November issue, we note a statement regarding setting of a T. E. V. to the desired back pressure. We are of the opinion that the T. E. V. is set to a given superheat and not to any desired back pressure. —Sam Meredith and Mathias Kolleck.

EDITORS NOTE: Your recent letter calling to our attention the answer given for Question 629 has brought to light the fact that the original question was in error when it discussed the thermostatic expansion valve instead of the automatic. The answer given for this question in the November issue was based on the operation of the automatic expansion valve and not on the T. E. V.

REACTION OF GALVANIZED PIPE IN AMMONIA SYSTEM

QUESTION 638: In 1930 there was installed a Brunswick C50 ammonia compressor to cool a walk-in cooler. The head pressure has always run around 155 lbs., the low side 22 lbs. About a year ago there was installed (under protest) a piece of ½" inside galvanized pipe to replace a piece that had rusted out. This piece was about 5 feet long.

Head Pressure Builds Up

Since then the head pressure has built up to 210 lbs., the low side remaining the same as it was, 22 lbs. The system has been purged and the water tubes cleaned but with no help for the high side. There is no change in the cooling water temperature or any other condition in the system except the galvanized pipe.

Will you kindly advise the procedure to remedy this condition. The galvanized pipe will be taken out and replaced with black iron pipe.

ANSWER: When galvanized pipe is used in an ammonia refrigerating system the ammonia acts on the zinc to form zinc nitride and to release hydrogen gas in the system. The zinc nitride would be in small particles or flakes which would tend to clog such small openings as expansion valves unless adequate strainers were provided in the system. The hydrogen gas would have the effect of any foreign non-condensable in the system and would raise head pressure until purged out.

You state that the system was purged, supposedly at a time when the purging would remove the hydrogen generated from action on the zinc. This should have removed the cause of the high discharge pressure. If it did not, then the purging was not complete or the high discharge pressure has resulted from some other condition in the system.

ICE CREAM HARDENING PROBLEM

QUESTION 639: I have been servicing a Mills Model 30 freezer to which is hooked a 3 hp. Universal unit. There is a 6-hole cabinet also refrigerated from this same unit and controlled by a snap-action valve in the suction line. There originally was trouble with moisture which has been eliminated. New expansion valves were put on at that time.

Cabinet Warms

The trouble now is in the maintaining of temperatures in the hardening cabinet. When ice cream is put in to harden, the cabinet warms up from 30 below to 10 or 15 above zero in about 12 hours. One side of the hardening compartment is about 30 degrees warmer than the other when more than 30 gallons of fresh cream is put in. Please explain this trouble.

ANSWER: We believe that the trouble described is caused by restricted cabinet expansion valves. This is probably a continuation of the moisture condition previously experienced with this equipment.

We don't know which side of the Model 80 Freezer described is the warmer, but we assume that it is the side of the cabinet that is closest to the expansion valve compartment. The coils in the Model 30 freezer consist of three oil filled slabs. The slab farthest away from the expansion valve compartment is fed first, then, the middle slab, and then the slab closest to the expansion valve. If the expansion valve were restricted only the slab farthest from it would be refrigerated. This

also explains why the ice cream does not harden. This soft ice cream is about 26 degrees Fahrenheit when it comes from the mixer, and since there is insufficient refrigerated coil to take the heat from it, the temperature inside of the box is raised.

CHANGING TO AUTOMATIC EXPANSION VALVE

QUESTION 640: Is it possible to change a Servel model H.S. 10D sealed unit capillary tube charged with methyl to automatic expansion valve?

ANSWER: An Automatic expansion valve will not work satisfactorily on the Servel H.S.10D sealed unit, which is now equipped with a capillary tube. The evaporator employed on these units is the flooded type and automatic expansion valves do not work satisfactorily with the flooded type of unit because there is almost sure to be by-passing of the refrigerant through the top part of the unit. It is sometimes possible to replace the tube with the thermostatic expansion valve; however, difficulty may be experienced with these valves also. The highside float is the best replacement for the capillary tube, inasmuch as a highside float will work satisfactorily with a flooded type of evaporator.

NORGE TWO-TEMP. CHARGE

QUESTION 641: I was called to service a Norge C/M, Model AD, Class E refrigerator. Others had worked on this unit before I was called. They have had the Rollator out and put in a new float but it still doesn't work properly. Before I go ahead with it, I would like to know what the purpose of the two gases in the system is and where I can get more information on this model.

ANSWER: The Norge Refrigerator to which you refer is a design made especially for maintaining two different temperatures in the evaporator.

The principle involved in the C/M series is that the two refrigerants in passing through the high side float first enter the low temperature section where the freon evaporates at a lower temperature than sulphur dioxide under the same pressure. Sulphur dioxide then passes into the main evaporator where evaporation at its temperature takes place.

There is an illustration of the Norge C/M Cycle given in the October, 1943, REFRIGERATION SERVICE ENGINEER, which may be of some assistance to you in understanding the cycle.

You have not given definite information as to what improper operation has prevailed. It is quite possible that the proportion of Freon to sulphur dioxide is not correct, which would naturally upset the balance of the system. The charge should be: 2¼ lbs. SO_2 and 2 oz. F-12.

EVAPORATOR FROST PROBLEM

QUESTION 642: I am experiencing a little difficulty in setting and adjusting machines employing forced convection coils. I have been working on a ¾ hp. Sterling unit, charged with Freon-12 ....., and using a Peerless "porcupine" forced draft cooling unit. The TXV was replaced a short while ago with a Sporlan, one ton valve, for Freon. The control (press.) was also changed, the one installed being a Minneapolis-Honeywell Polartron, model p-421.

The trouble lies in the fact that the top half of the coil freezes badly, cutting circulation through that half of the coil. In trying to maintain an average cooler temperature of thirty-eight degrees, the coil invariably frosts this way. When adjusting the control to operate on a defrost cycle, the temperature ranges between 39° and 45°. I would like to find out whether or not there is any fairly constant rule by which these controls on this type of system may be set. What would be the approximate setting on this machine in comparison to the same machine using a gravity coil?

I have also tried to correct the trouble by adjusting the expansion valve, with as little success. Any help you could give me would be much appreciated.

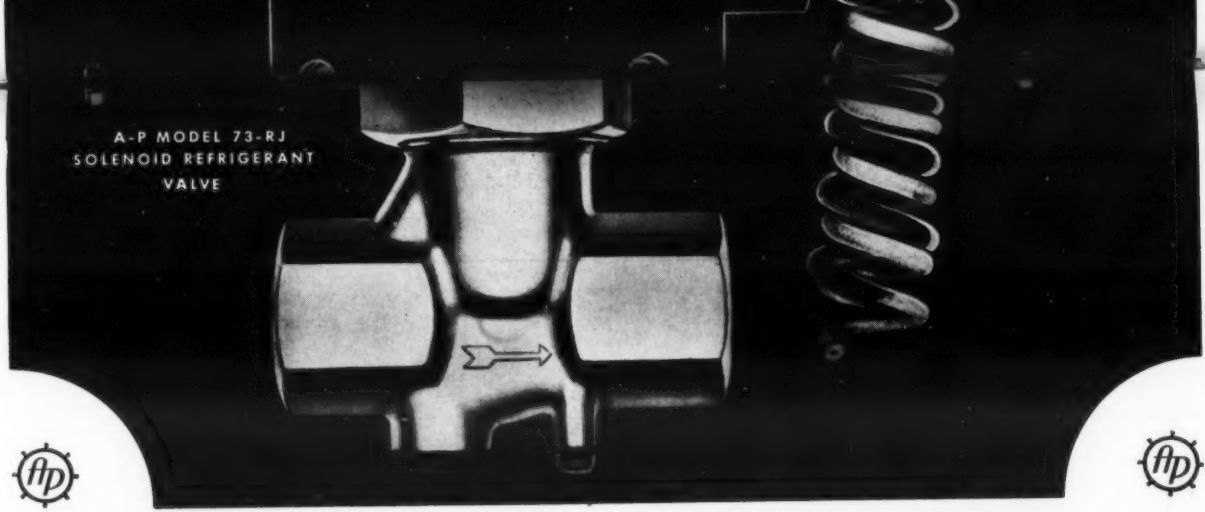
ANSWER: The evaporator used on the system you mention may be too small for the application. This would seem to be the case, because you find it necessary to operate the evaporator at such a low temperature in order to maintain the desired refrigerator temperature. The evaporator may have originally been adequate, but now there is a possibility that the insulation has lost some of its efficiency, thereby increasing the load on the evaporator.

I might suggest that the fan be operated from a separate thermostat or connected into the line to operate continuously in order to melt the frost during the off-cycle. You may find continuous fan operation undesirable due to the possibility of flooding of the coils during the off-cycle, however, I believe that I would try the continuous operation

(Continued on page 66)

Dependability doesn't happen...

IT'S ***BUILT INTO*** EVERY AP VALVE



DUAL VOLTAGE COILS NOW AVAILABLE ON A-P SOLENOID REFRIGERANT VALVES

Add a *new* advantage to A-P DEPENDABLE Solenoid Refrigerant Valves! It's *Dual-Voltage* coils—permitting use of the solenoid on either 115 or 230 volts. No need to stock valves for each voltage. Simplifies inventory and service, too.

Available now on A-P Solenoid—Models 71-J, 73-RJ and 270. Ask your jobber for them TODAY.

AUTOMATIC PRODUCTS COMPANY

2454 North Thirty-Second Street • Milwaukee 10, Wisconsin
Export Dept.—13 E. 40th St., New York 16, N. Y.

DEPENDABLE
REFRIGERANT VALVES

Stocked and Sold by Progressive Refrigeration Jobbers Everywhere — Recommended and Installed by Leading Refrigeration Service Engineers.

Cleveland Electrical League Discusses Air Conditioning

THE first electrical industry conference on controlled indoor climate was held recently in the Hotel Statler, Cleveland, Ohio, by the Electrical League of Cleveland. The meeting was attended by more than 300 members and guests.

The first real interest shown by electrical men in the promotion of better heating, cooling and air conditioning came at Indoor Climate Institute's Open Forum held in Detroit last September, according to an industry spokesman. The ninth annual conference, International Association of Electrical Leagues, was meeting in Detroit at the same time and T. A. Crawford, first vice-president of Indoor Climate Institute was invited to address this convention. Many of the electrical men also heard Merrill E. Skinner, vice-president, Buffalo, Niagara and Eastern Corporation, when he spoke before the I.C.I. forum on the "Utilities' Program to Promote Greater Indoor Comfort and Health." Following these talks a number of utilities and electrical men attended the seminar on local chapters which was a part of the I.C.I. two-day conference and which was chairmaned by Jack Searls of White Rodgers Electric Company.

Promotional Program Started

In October the Electrical League of Cleveland appointed an indoor climate committee to develop a promotional program. The first step of this committee was to sponsor the Cleveland meeting.

George Boeddener, managing Director, National Warm Air Heating and Air Conditioning Association was among the speakers on the program. His talk dealt with a program for training installation men, contractors and dealers. He said, "Action must supplement planning right now, if this industry is to get its share of the consumers' dollar."

W. R. Moore, regional manager, Minneapolis-Honeywell Regulator Company, was the last speaker before dinner. He pointed out that the turnover in heating dealers is 38 per cent. "This," he reasoned, "shows a definite need for training." In outlining the market opportunities for controlled indoor climate in the Cleveland area Mr. Moore explained that of the 220,000 homes 205,000 had central heating systems but that only 40,000 of them had automatic firing installations. He estimated the immediate postwar market for automatic control equipment in the Cleveland area at $650,000. He said that approximately $800,000 of this total would go into existing homes, $200,000 into new homes and $150,000 into commercial installations. In summing up his remarks Mr. Moore said, "Let's be realists; we are all interested in profits. Your share will depend upon you and your merchandising methods."

P. B. Zimmerman, president, Indoor Climate Institute and vice-president and general sales manager, Chrysler Corporation, Airtemp Division, was the after dinner speaker at the Electrical League of Cleveland's conference. His subject was "Making Cooperation Count." He showed how basic industries develop through progressive cycles of an introductory period, an acceptance era and finally the demand period. Mr. Zimmerman traced the growth of several industries; electric refrigeration, radio, automobile and household appliances. He emphasized that the demand period must be preceded not only by product development which always increases utility and economy, but by an educational program that will enable the public to evaluate the benefit to be derived from the product.

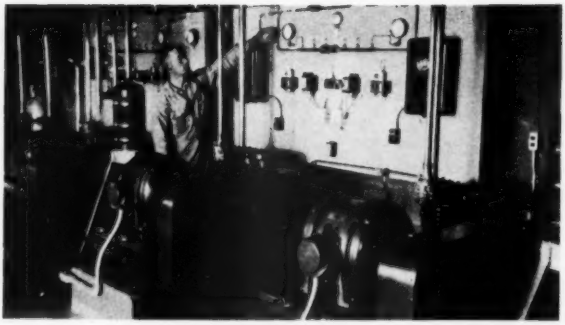
S S S

RSE BINDERS AVAILABLE

A LIMITED number of binders for copies of The Refrigeration Service Engineer are now available. These binders accommodate a full years' subscription and keep the copies of the magazine firmly bound for convenient reference. Binders have not been available for several years because of material shortages and the present supply is limited. Orders will be filled in the order of their receipt while the present supply lasts. Price $1.50 postpaid. Send orders to Nickerson & Collins Co., 433 N. Waller Ave., Chicago 44, Ill.

S S S

William Clement Davis and Swift B. Davis have published a certificate that they are conducting business under the firm name of Davis Refrigeration at 8940 Santa Monica boulevard, Los Angeles, Calif.



Andrew Swanson at the Panel-board of the Cold Storage Plant. His services have been so valuable that he has received special commendation from the Colonel in Command.

Major Ned Williams (left) and Mr. Swanson at one of the Army Outposts on an inspection trip.

COOLERS AT SUPPLY OUTPOSTS

THE refrigeration business is reaching the stage where orders may be coming from north of the Arctic Circle. According to Andrew A. Swanson, member of the R. S. E. S., the accompanying pictures show the type of equipment installed at some army supply bases and outposts. In the machine room shown is two 20 H. P. and two 30 H. P. units maintaining proper temperatures in a cold storage plant at a supply base.

In addition to the cold storage plant, Mr. Swanson must care for outpost equipment of the type shown here. This is a portable refrigerator of about 1400 cubic feet, with a compressor that can be either electric or gasoline engine driven. The jeep proves very satisfactory as a service car on trips to these portable locations. Mr. Swanson says, "The long hours of summer sunshine on these portable units constitute a real refrigeration load. . . . It is no colder here than it is in Chicago right now. Thanks to this little portable radio."

STUDENTS FIND REFRIGERATION SERVICE ENGINEER

THE students of the Commercial Trades Institute know a good thing when they see it so—when a copy of the Refrigeration Service Engineer was shown around, 80 per cent of the resident Chicago students immediately signed up and paid for their subscriptions.

A check was sent to the publishers together with a request for quick action. Now that they know about this, the men don't want to miss anything. Commercial Trades Institute, located at 209 W. Jackson Blvd., in Chicago is devoted exclusively to the teaching of refrigeration and air conditioning.

Formerly a refrigeration training school for enlisted men in the U. S. Army, the school is held in high esteem by Army officials and many discharged service men are now in training under the G. I. Bill of Rights.

Branches of Commercial Trades Institute are located in Bloomington, Ill. and Birmingham, Ala.

Home Freezer Market Exaggerated Says Frigidaire Head

SOME of the rosy predictions of home freezer post-war volume, should be taken with a grain of salt, is the opinion of P. M. Bratten, General Sales Manager of the Frigidaire Division, General Motors Corporation.

Mr. Bratten pointed out that figures released in the press and periodicals indicated annual potential markets ranging all the way from two hundred thousand home freezer units to over two million units. "Certainly," he declared, "there must be something wrong with these widely divided estimates." Frigidaire's own surveys indicated a probable potential of between three hundred and fifty and four hundred thousand units per year in the post-war period and if these figures are anywhere near accurate, there is sure to be some pretty hectic competition between the 132 manufacturers who have indicated that they will produce home freezers.

Price an Important Factor

Price, of course, will be an important factor and although accurate figures cannot be determined at this time, Mr. Bratten indicated that the price of Frigidaire's home freezer would be approximately the same as that of a good household refrigerator. "We all know how price, performance and volume have gone hand in hand in the household refrigerator field," said Mr. Bratten. "We believe it no more than reasonable to expect that the same principles will apply in the home freezer field. Quality and performance are especially important here because of the substantial investment users have in products stored in their home freezers. Home freezers must be especially well designed and well built to start with, and in addition they must be backed by top-notch national and local service facilities if they are going to win the kind of public confidence that is necessary to assure a sound foundation."

This being the case, Mr. Bratten feels that the old established manufacturers will have a definite edge in the highly competitive home freezer situation that he foresees. In expressing confidence that the Frigidaire organization would be able to give a good account of itself in this market, he pointed to nearly a quarter century of experience in design and manufacture of low temperature equipment during which time more than three hundred and fifty thousand Frigidaire low temperature cabinets have been built and sold.

In referring again to the extent of the potential market, Mr. Bratten emphasized the difficulty of forecasting with any degree of accuracy how the demand for home freezers will be affected when food rationing is ended and the food distributing industry puts some of its own post-war plans into effect. Much will depend upon the availability of high grade frozen foods and the willingness of the housewife to learn and carry out techniques required to get satisfactory results when original freezing is done in the home.

Family Plans

Another important factor will be the "planning conferences" that the average family will have before making purchases in the post-war world. Today, when so few items can be purchased, it is generally recognized by experienced executives that Mr. and Mrs. America are rather free in agreeing that they will buy many products when these are again available. However, when such products do become available, it is a pretty safe bet that the family will buy first what it needs and wants most.

How the home freezer will fare under such conditions is not definitely known. But it is known that automobiles, washing machines, refrigerators, furniture and perhaps the purchase of a new home, generally out rank home freezers in order of preference. Thus, it may be that many who say they intend to buy a home freezer may defer that purchase for a considerable period.

S S S

SOLDIERS PLAN FOR FUTURE

ONE enlisted man out of every eight plans, on being discharged from the Army, to operate a business or farm of his own, according to a survey among troops in the United States and overseas theaters conducted by the Information and Education Division, Army Service Forces. Seven per cent of the men now in the Army have definite plans for operating a business, five per cent plan to operate farms. For the most part they are interested primarily in relatively small enterprises.

Suction Pressure on Airtemp Equipment

By Tom Hollencamp*

SUCTION pressure is commonly referred to as "back pressure," and is the pressure in the suction line where it leaves the evaporator or cooling coil. Normal suction pressure is, of course, dependent on the unit application and in relation to the variable conditions that are imposed on an operating system. On packaged air conditioning units, the design suction pressure runs between 35 and 40 pounds.

Variations from this design suction pressure may usually be attributed to clogged air filters, which restrict the circulation of air through the evaporator, and to improper functioning of the expansion valve. These two items are mentioned first because they constitute ninety per cent of your service problems. Periodical cleaning or replacement of air filters is a *must* assignment to insure proper operation of your equipment.

Suction pressure has a direct relation with the expansion valve operation. On packaged units the evaporator and expansion valve are sized to coincide with a balanced operation. Thermal expansion valves, as furnished on Chrysler Airtemp units, consist mainly of a valve which is opened by a pressure differential on a diaphragm and closed by spring pressure opposing the diaphragm. Gas pressure on this diaphragm is determined by the saturated temperature of the liquid refrigerant in the remote bulb and tubing arrangement that is an integral part of the valve assembly. This remote bulb is tightly attached to the suction line as it leaves the evaporator and is insulated so that the temperature of the bulb is the same temperature as the suction gas. The main operating force in the expansion valve is superheat, and a gas is superheated whenever its temperature becomes higher than the temperature corresponding to its pressure at saturation. Should the expansion valve feed too much liquid into the evaporator, all of the liquid does not boil off and some liquid approaches the remote bulb which lowers the temperature of the bulb and reacts to operate the expansion valve toward its closing position. If insufficient liquid is fed into the evaporator by the expansion valve, the opposite valve action occurs.

Cause of Suction Pressure

Suction pressure above normal or high suction pressure may be caused by the expansion valve being open too wide or the thermal bulb may be loose on the suction line.

A leaky oil separator that permits discharge gas to return to the compressor crankcase through the separator oil return line will cause a high suction pressure. This condition is indicated by a hot line temperature whereas the normal feel of the line should be room temperature.

(Continued on page 64)

AIRTEMP TROUBLE CHECK CHART

SUBJECT	SYMPTOMS OF DIFFICULTY	METHOD OF CORRECTION
High Suction Pressure	Liquid refrigerant flooding back from evaporator.	Check expansion valve operation and adjustment, also thermal bulb attachment.
	Oil separator leaking discharge gas back to crankcase.	Jar oil separator body by bumping with block of wood or hammer.
	Leaky suction valve.	Pump down compressor, remove cylinder heads and inspect suction valve plates.
Low Suction Pressure	Restricted liquid or suction lines.	Examine strainer screen. Expansion valve bulb may have lost charge.
	Expansion valve not adjusted properly.	Adjust further open.
	Air filters clogged.	Clean filters.

*Assistant Service Manager of Chrysler Corp., Airtemp Division, Dayton, Ohio.

(Reprinted by permission from Nov. 15, 1944 issue Airtemp News).

Advanced Training Course for Servicemen Announced by Frigidaire

COMPLETE plans for a new Frigidaire Advanced Training Course for servicemen has been announced by Paul V. Sprout, service manager of the Frigidaire Division, General Motors Corp. These plans formulated during the past several months, were presented to the Frigidaire District Service Managers at three conferences held recently in Memphis, Tenn., Chicago, Ill., and New York, N. Y.

During the meetings, the training program for the coming winter was fully discussed. The training courses of the past were reviewed and responsibility for carrying out further primary training was placed directly with the distributing and dealer organizations. At the same time an advanced training course for experienced servicemen was presented and a schedule set up for the presentation of that course to the servicemen at a series of schools to be conducted between now and the end of February throughout the country.

A new portable Frigidaire "Viso-Trainer"; a small model of a former Frigidaire training device was unveiled and widely acclaimed by servicemen during the three regional conferences.

The "Viso-Trainer"

The Frigidaire "Viso-Trainer" has been developed to assist in demonstrating the proper methods of servicing Frigidaire refrigeration equipment, and it is based upon a device used for several years in Frigidaire factory service training. The "Viso-Trainer" is now being used in all of Frigidaire's advanced training schools and has proved itself an unusually successful training medium. Field servicemen claim it is contributing materially to the service educational program going on at the present time.

This "Viso-Trainer" consists of a section of transparent bent glass tubing representative of the copper tubing used in an evaporator or cooling unit. The various gauges and thermometers necessary for testing can be installed for the visual class reading. A connection is provided so that many types of household and commercial refrigerant control valves and restrictors can be hooked into the apparatus.

By operating these valves either manually or automatically, actual refrigerant can be passed into the glass tubing, thereby showing students the exact appearance, movement, and results of liquid refrigerant and its conversion into a vapor. Thus, the functioning of various valves and the action of refrigerants are clearly demonstrated as they actually occur in a Frigidaire freezer or cooling unit. By this means, typical service conditions and problems are duplicated before the students' eyes, and they are shown in a way that they cannot easily forget how such difficulties as oil logging, shortage of refrigerant, excess refrigerant, line restrictions, etc., are caused and can be corrected.

Herman F. Lehman, General Sales Manager, Frigidaire Division of General Motors Corp., discusses the "Viso-Trainer" with (left to right) George Reed, Service Manager, Baltimore Branch; Frank Rice, Commercial and Air Conditioning Manager, New York Branch; R. H. Huston, Manager Eastern Region; A. T. Arminio, Comptroller and Assistant Branch Manager, New York

The "Viso-Trainer" will be used for the demonstration of the proper method for servicing Frigidaire refrigeration equipment and also to educate the public in the principles of Frigidaire refrigeration when Frigidaire household equipment is available for selling.

PAR Condensing Units are designed and manufactured on the same principles as fine automobile motors, with such outstanding features as drop forged steel crankshafts, hardened and lapped to mirror like surface. . . . Oilite crankshaft bearings with a high degree of porosity to insure constant lubrication. . . . Ring type pistons, two compression and one oil ring, hand fitted to each piston. These and many other features as oversized air-cooled condensers and large capacity receivers assure you of economical, efficient refrigeration and extra years of trouble-free service.

PAR Units are available in sizes from ¼ to 5 H.P. and will handle any application calling for 500 to 70,000 BTU capacity per hour. See your PAR Jobber or write today for illustrated catalogue and complete specifications on PAR air-cooled and water-cooled condensing units.

. . . . *By Comparison — You'll Buy PAR*

PAR Lynch DIVISION

Manufacturing Corporation, Defiance, Ohio U. S. A.

Mr. Sprout also informed the service managers of Frigidaire's plan to award a "Certificate of Training" to all qualified servicemen who satisfactorily complete the advanced training course.

The training course will cover a five-day period. The first four days will be devoted to instructions in servicing refrigeration equipment, with the fifth day being devoted to the servicing of electrical ranges or to any other special subject the district selects. It was announced at the regional meetings, that there will be a newly developed Dealer's Servicing Guide available within a short time for Frigidaire dealers, and a "Plan Book" covering the coming winter service program was circulated. This book is being used by Frigidaire to promote the courses on training, and to explain the new Frigidaire plan for providing winter "Preventive Service" during the off peak months.

Mr. Sprout was in charge of the three meetings and was assisted by E. E. Landis, Assistant Service Manager, who discussed the selling of winter service; R. K. Eley, supervisor of the technical division, who discussed training; C. P. Ogden, supervisor of service parts, sales and field contact division, who outlined plans for the dealer guide; and A. W. Lane, service office manager, who dwelt on emergency orders and the parts inventory problems. In Memphis and New York, J. R. Frame discussed advanced types of refrigeration equipment in relationship to servicing, with H. F. Harter presenting the same talk in Chicago.

American Society of Refrigerating Engineers Holds Annual Meeting

MEETING at the Pennsylvania Hotel, New York City, December 10 to 13, 1944, the American Society of Refrigerating Engineers, in its regular annual meeting, observed its 40th anniversary. Due observance was made of the occasion by extending suitable recognition to the old-timers, the living charter and early members of the Society.

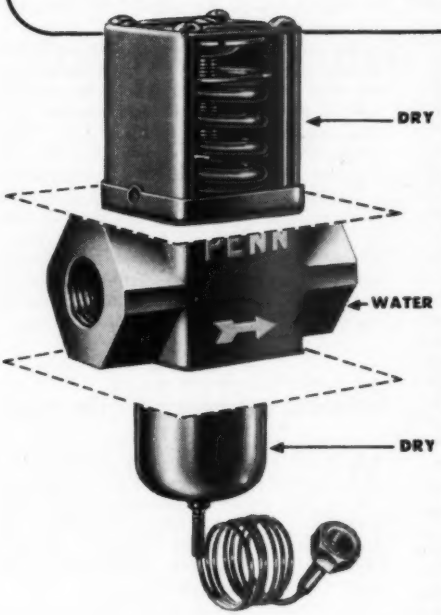
Announcement was made of a new project by the Society, the publication of Refrigeration Abstracts which will be a comprehensive review of literature published on refrigeration appearing in the various publications and from other sources. Prof. J. Mack Tucker, of the University of Tennessee, will be the editor. At a meeting of representatives of interested refrigeration associations, plans were formulated for the creation of a joint committee on refrigeration equipment nomenclature. A committee meeting of formally appointed association representatives will be held in Washington early in 1945 on this project.

The usual program of technical papers was presented, most of them being contributions to the current literature of technical refrigeration.

J. F. Stone of New York was elected president; Chas. S. Leopold, Philadelphia, first vice-president; Roland H. Money, second vice-president; John G. Bergdoll, Jr., treasurer; and David L. Fiske was re-elected secretary.

Group at A.S.R.E. Luncheon. Left to right: D. L. Fiske (Major U. S. Army) Secretary; M. R. Carpenter, Cons. Engr.; J. F. Stone (Johns-Manville Sales Corp.) President-elect; H. N. Davis, Speaker; A. B. Stickney (Armour & Co.), Retiring President; L. Williams (York Corp.); C. S. Leopold, Cons. Eng., First Vice-President; Henry Torrance (Carbondale New York Co.); N. H. Hiller; J. G. Bergdoll (York Corp.), Treasurer.—*Photo courtesy Austin Jones, Kerotest Mfg. Co., Pittsburgh, Pa.*

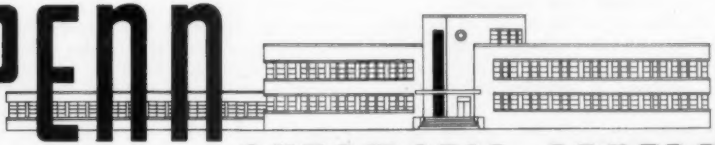
Zoned for safety!



● Here's the one sure way to keep Sedimentation, Corrosion and Rust *away from sliding parts.* In this new water regulator, the PENN Series 246, water flows in the center section only, *never above or below.* Consequently, range spring and sliding parts are bone dry—free from abrasive deposits. Valve seats can't stick, nor range springs turn rusty. Nothing here to invite premature wear.

Water hammer has been eliminated, too, and yet the valve is very sensitive to changes in refrigerant head pressure. *Manual flushing* is yet another feature of all PENN Water Regulators. They're available in two styles—flanged and threaded—and in a wide capacity range. For further information, ask for Bulletin R-1986. *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U. S. A. In Canada: Powerlite Devices, Ltd., Toronto, Ont.

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

GOVERNMENT BUREAUS

(Continued from page 18)

locally or interregionally. List A covers: trucks and truck tractors, off-the-high-way trucks, truck trailers, motorcycles, power cranes and shovels, heavy motor graders, tracklaying tractors, bicycles and powercycles, commercial electric food equipment, cutlery, industrial power trucks, typewriters, commercial laundry machinery, 35 mm. motion picture equipment, locomotives (steam and diesel), railroad cars and buses.

3—Any production authorized in excess of the approved level shall be undertaken under Priorities Regulation 25, the "spot authorization" procedure, which has already been sharply restricted. This production would be given a deferred allotment of controlled materials and no priorities assistance, except that a rating of AA-5 would be granted on materials for items on the "preferred list" of essential products.

4—It will be the general WPB policy not to approve amendments or revocations of "L" and "M" orders that would result in any increase of production over the levels authorized in the fourth quarter 1944, unless the increase is clearly justified under point 1 above.

OPA ASKS INJUNCTION AGAINST REPAIR FIRMS

THE Philadelphia OPA office has requested the Federal Court to issue injunctions against 47 firms doing repair business on electrical appliances, radios, and other household equipment until they conform to the terms of Maximum Price Regulation 165. OPA claims all these firms failed to register on September 10, 1942 as required by law, and failed to keep price records and data to show how they arrived at their prices. The requested injunctions require each defendant to register and file prepared price statements at once.

CONVERTING MILLS CABINETS

(Continued from page 26)

The diagram shows the layout of the control panel, inside the cabinet, located in the high temperature chamber. It indicates the relative positions of switches and controls.

The electrical hook-up shown in the lower half of sketch, permits the circuits to be traced and will aid in checking any electrical trouble. A study of the diagrams will also point out what happens when certain switches are thrown to different positions.

SUPPLY JOBBERS APPOINT FULL TIME SECRETARY

AT A recent meeting of the Directors of the National Refrigeration Supply Jobbers Association, the position of full time Executive Secretary was established. Fred Hovey, who has so ably handled Association matters for the past five years on a part time basis, found it impossible to give up his other interests. The Association sincerely regrets the loss of Mr. Hovey's capable guidance and untiring efforts.

The Directors have been fortunate in obtaining the services of H. C. McCloud who has been active in the Jobbers Association, both as a member in the refrigeration jobbing business with Williams & Co., Pittsburgh, Pa., and as President in 1936, and Director since that time in the association.

Mr. McCloud will be ably assisted by Miss Mary Silvers who has devoted her full time to association work for the past five years. Largely through the efforts of Miss Silvers and Mr. Hovey, the Association has grown and become recognized. The association office will be established in Cincinnati, Ohio.

HERMAN GOLDBERG'S CHRISTMAS PARTY

WITH all the marks of a Hollywood production, the annual Christmas season of the upper Mississippi Valley was heralded by the completely successful "annual event," the eighth Herman Goldberg Christmas Party at the Drake Hotel, Chicago, Dec. 14. (See pictures, page 48.)

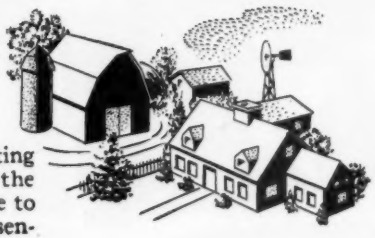
Out-of-town visitors were arriving all day to be present when the party officially opened at 9:00 P. M. Many were accorded that warm welcome by Herman or one of his able staff on entering the hotel.

The guests were cordially greeted at the entrance to the Walton Room by Mrs. Goldberg. The party got under way when Herman stepped to the "mike" and extended greetings to the overflow throng. Extra tables were arranged in the several archways around the ballroom and in the adjoining area for those who arrived late. The additional overflow soon filled the mezzanine to view with vantage the excellent floor show.

No sooner were tables occupied than the waiters were serving refreshments of beer, tasty sandwiches, and coffee. When the orchestra retired at 2:00 A. M., many of the more hardy were unwilling to bring so pleasant a time to a close.

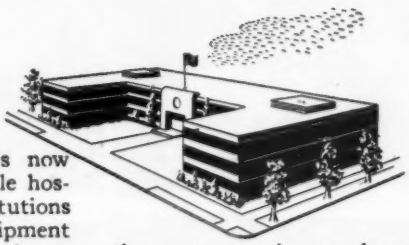
IT'S TRUE!

You can manufacture many refrigeration products for civilian use



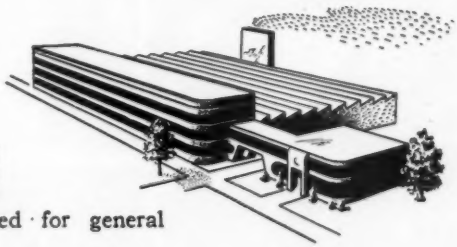
FARMS

With the recent relaxation of limiting orders on commercial refrigeration, the government has now made it possible to supply new equipment for certain essential uses.



INSTITUTIONS

For example a dairy farmer is now eligible to buy milk coolers; while hospitals, hotels and all those institutions that require new refrigeration equipment for essential food preservation and many other uses can also purchase new units.



INDUSTRIAL PLANTS

Special processes employing refrigeration (many developed for and used only on war equipment) are now released for general industrial use.

The priority regulations are changing almost daily making materials available for previously "frozen" products. When your products are released, remember—Chieftain units are still the leader.

Chieftain

TECUMSEH PRODUCTS CO.
TECUMSEH • MICHIGAN

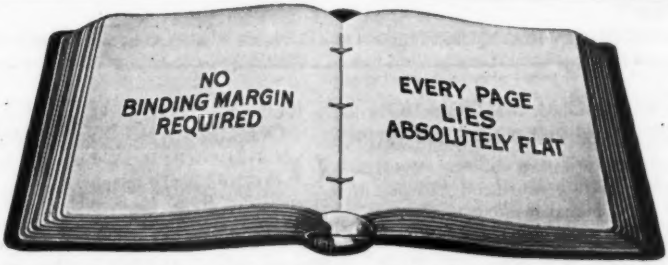
Snapshots at Herman Goldberg's Annual Christmas Party

Photos by Irving Alter, Chicago

LIMITED SUPPLY

BIND—your copies of THE REFRIGERATION SERVICE ENGINEER for Future Reference

ALL COPIES ARE PUNCHED TO FIT THIS BINDER



Every issue of this magazine will have valuable information which you will want to retain for future reference.

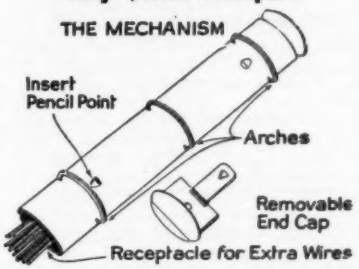
Here is a handy, substantial binder that permits you to add each copy readily as it is received. The binder is so constructed that regardless of the number of issues, every page lies flat and is easily read.

Holds twelve issues—an entire year's supply. No hunting around for lost or missing issues. The entire year's edition is always handy.

The name of the magazine is attractively stamped on the cover in gold.

HOLDS TWELVE COPIES

Only $1.50 Postpaid



It's simple — here is how it works

Each issue is locked in place with spring wire. It takes only an instant to add an issue. Reserve supply of extra wires for future issues is kept in the back-bone of the binder. File your copies promptly as received.

Send Your Remittance of $1.50 to

THE REFRIGERATION SERVICE ENGINEER
433 NORTH WALLER AVE. CHICAGO, ILL.

Refrigeration Service Engineers Society

Official Announcements of the activities of the International Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.

THE OBJECTS OF THE SOCIETY

To further the education and elevation of its members in the art and science of refrigeration engineering; for the reading and discussion of appropriate papers and lectures; the preparation and distribution among the membership of useful and practical information concerning the design, construction, operation and servicing of refrigerating machinery.

INTERNATIONAL HEADQUARTERS: 433-435 North Waller Ave., CHICAGO 44, ILL.

INTERPROVINCIAL ASSOCIATION MEETING TO BE HELD MARCH 18-19

CANADIAN Chapters of the R.S.E.S. forming the Interprovincial Association will hold their annual meeting in Montreal, March 18th and 19th. This is the important meeting of the year for the refrigeration industry in Canada and for the first time the meeting will be held in a city other than Toronto. Mount Royal chapter of Montreal will be hosts to the convention.

MILWAUKEE CHAPTER PETITIONS FOR CHARTER

AT THE second preliminary meeting of refrigeration men of Milwaukee and vicinity, a petition for charter was signed by 36 men. Eight former members were among those who joined.

The meeting was held at the Milwaukee School of Engineering on December 5. Those present showed their interest in becoming members and helping to make the Chapter a success. The temporary President, Felix R. Wierman, read the Constitution and By-Laws of the International Society. The Constitution was discussed and subsequently approved.

The next meeting was held Tuesday, January 9, 1945, at which time R. L. Hendrickson, of the staff of the REFRIGERATION SERVICE ENGINEER gave an interesting talk.

The temporary officers for the Chapter are: Felix Wierman, *President;* Herbert Beck, *Vice-President;* E. A. Balcerzak, *Secretary-Treasurer.*

The chapter will be augmented by several men who have recently joined Milwaukee companies and by members-at-large in that area.

ILLINOIS ASSOCIATION R.S.E.S. OFFICERS AND BOARD MEET

ON DECEMBER 14, 1944, the new officers and board members of the Illinois Association R. S. E. S. met at the Drake Hotel to plan activities for the ensuing year. Those present were: A. L. Fait, president, Lincoln; Wm. C. Metcalf, first vice-president, Joliet; Keith Ruyle, second vice-president, Ottawa; R. E. Saunders, secretary, Bloomington; John H. Sackey, treasurer, Galesburg; J. J. Klein, Springfield; B. V. Clark, Aurora; Ralph E. Porter, Bloomington; Floyd Lilley, Chicago; Wayne Eakle, Canton; W. O. Luttrell, Galesburg; Earl Seaton, Rockford.

Excerpts from the minutes of the last meeting were read by the Secretary. Discussion was entertained relative to a committee to watch possible new legislation that might affect the refrigeration service men. After due consideration and a vote by those present, Mr. Fait appointed R. L. Hendrickson, Chairman, J. J. Klein, and Keith Ruyle to act as the Legislative Committee.

The secretary reported on the preparation of a booklet to contain the State Association Constitution and By-Laws. The proposal was accepted and the secretary was instructed to proceed with the printing of and distribution to the state association members.

The Board voted approval on paying the association secretary the sum of $25.00 at the end of the year for which he serves. Payment was made retroactive to cover the year 1944 for valuable services rendered by Meyer Axelrod, Chicago. Bloomington was selected as the 1945 convention city, with Corn Belt Chapter as the host.

Meeting adjourned and all attended Herman Goldberg's Christmas Party.

JUST OUT! NEW FROM COVER TO COVER!

AUDELS REFRIGERATION and AIR CONDITIONING GUIDE

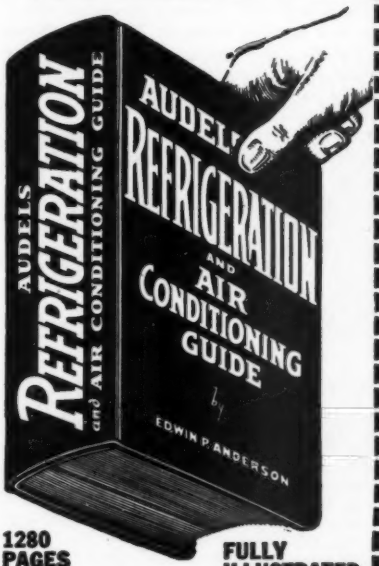
"AUDELS REFRIGERATION & AIR CONDITIONING GUIDE." 4 Books in One: covering the basic principles, servicing, operation and repair.

1. HOUSEHOLD REFRIGERATION
2. SPECIAL REFRIGERATION UNITS
3. COMMERCIAL & INDUSTRIAL REFRIGERATION
4. AIR CONDITIONING SYSTEMS

A gold mine of essential important facts for ENGINEERS, SERVICEMEN, SHOPMEN AND USERS.

A good book is a good friend! Here you will have at your fingers' ends a complete library in ONE VOLUME, the necessary data you have been looking for on: MODERN UNITS, SYSTEMS AND MACHINES, REFRIGERANTS, including Freon, Quick Freezing, Lockers, Water Coolers and Air Conditioning Systems. 1280 pages, 46 chapters all fully illustrated and indexed for ready reference and answers to your questions. Size 4¾ x 6½ x 1¾. Flexible covers.

Ask to See It!



1280 PAGES **FULLY ILLUSTRATED**

TO GET THIS ASSISTANCE FOR YOURSELF MARK FIRST BOOK (X) ON MAIL ORDER COUPON NOW. **4** COMPLETE PAY $1 ONLY A MO.

THEO. AUDEL & CO., 49 W. 23 ST., NEW YORK 10, N. Y.

CUT HERE

MAIL ORDER

THEO. AUDEL & CO., 49 W. 23 St., New York 10, N.Y.

Please mail me for 7 days' free examination the books marked (X) below. I agree to mail $1 in 7 days on each book or set ordered, and to further mail $1 a month on each book or set ordered until I have paid purchase price.

If I am not satisfied with Guides I will return them.

- ☐ Audels REFRIGERATION & Air Conditioning Guide $4.
- ☐ Audels PUMPS, HYDRAULICS & AIR COMPRESSORS 4.
- ☐ Audels WELDERS GUIDE . . . . . 1.
- ☐ Audels BLUE PRINT READING . . . . . 2.
- ☐ Audels SHEET METAL WORKERS Handy Book . . 1.
- ☐ Audels SHEET METAL PATTERN LAYOUTS . . . 4.
- ☐ Audels AIRCRAFT WORKER . . . . . 1.
- ☐ Audels MATHEMATICS and CALCULATIONS . . 2.
- ☐ Audels MACHINISTS & TOOLMAKERS Handy Book 4.
- ☐ Audels DIESEL ENGINE MANUAL . . . . . 2.
- ☐ Audels MECHANICAL Dictionary . . . . . 4.
- ☐ Audels AUTOMOBILE GUIDE . . . . . 4.
- ☐ Audels MARINE ENGINEERS Handy Book . . . 4.
- ☐ Audels SHIPFITTERS Handy Book . . . . . 1.
- ☐ Gueths MECHANICAL DRAWING COURSE . . . 1.
- ☐ Rogers DRAWING and DESIGN . . . . . 2.
- ☐ Audels MILLWRIGHTS and Mechanics Guide . . 4.
- ☐ Audels CARPENTERS and Builders Guides (4 vols.) 6.
- ☐ Audels PLUMBERS and Steamfitters Guides (4 vols.) 6.
- ☐ Audels MASONS and Builders Guides (4 vols.) . . 6.
- ☐ Master PAINTER and DECORATOR . . . . . 2.
- ☐ Audels GARDENERS & GROWERS GUIDES (4 vols.) 6.
- ☐ Audels ENGINEERS and Mechanics Guides Nos. 1, 2, 3, 4, 5, 6, 7 and 8 complete . . . . . 12.
- ☐ Audels Answers on Practical ENGINEERING . . 1.
- ☐ Hawkins Aids to ENGINEERS EXAMINATION . . 2.
- ☐ Audels WIRING DIAGRAMS . . . . . 1.
- ☐ Audels Handy Book of PRACTICAL ELECTRICITY . 4.
- ☐ Audels ELECTRICAL POWER CALCULATIONS . . 2.
- ☐ Hawkins ELECTRICAL Guides at $1. each . . . 10.
- ☐ Audels ELECTRONIC DEVICES . . . . . 2.
- ☐ Audels ELECTRIC Dictionary . . . . . 2.
- ☐ Audels RADIOMANS GUIDE . . . . . 4.
- ☐ Audels NEW ELECTRIC LIBRARY at $1.50 a Volume Vols. I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII.

Name_____

Address_____

Occupation_____

Employed by_____ R-11

MASSACHUSETTS STATE ASSN. FORMS NEW ENGLAND GROUP

THE fourth annual meeting of the Massachusetts State Association of the Refrigeration Service Engineers Society was held in Boston at the Hotel Gardner, December 10, with members and guests attending from neighboring states.

The program provided a full day's session and one of the important subjects included the dissolution of the Massachusetts State Association and the immediate formation of the New England States Association. This change was adopted to broaden the scope of activity of all of the Chapters in New England. The new organization as now constituted will include the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. Representatives of the various chapters in attendance promised their cooperation in expanding the activities of the new sectional Association.

Officers Elected

New officers elected for the New England Association are: President, Harold C. Lambert, Springfield, Mass.; First Vice President, William Tierney, Worcester, Massachusetts; Second Vice President, Arthur Andreen, Hartford, Connecticut; Secretary, Richard Seddon, Boston, Mass.; Treasurer, Lee J. Wallace, New Haven, Conn.: Sgt.-at-Arms, George Martin, Providence, R. I. A Board of Directors consisting of a member of each Chapter will be appointed by the Chapters later.

In opening the program, Retiring President Charles C. E. Harris, Boston, welcomed the members and guests and disposed of the business of the Association prior to the start of the educational program. H. T. McDermott, National Secretary, R. S. E. S. was the first speaker and provided factual information on the extent and importance of the refrigeration servicing field, stressing the importance of the members maintaining ethical standards of practice and building customer good will, in anticipation of post war business they can reasonably expect to secure.

Professor A. L. Hesselschwerdt, of the Massachusetts Institute of Technology, delivered an interesting talk on the new refrigeration code submitted to the Massachusetts State Legislature.

This code is the American Society of Refrigerating Engineers standard refrigeration code. Professor Hesselschwerdt said that he recognized the inequalities of the code but advised that after due consideration of a Committee representing all interested parties, it was submitted for adoption and urged the members of the R. S. E. S. to make representations for any changes desired which, he believed, would receive prompt consideration and revision.

Sterling Smith, sales manager, Refrigeration Division, Mills Industries Chicago, gave first hand information on the functions of the refrigeration division of the WPB and cautioned against over-optimism in the industry. He advised that materials and manpower were still critical and would presumably be so for the first half of 1945.

"A woman's viewpoint of the Service Man" was an interesting talk by Miss Emma Maurice Tighe, home economist for Boston Edison Company. She related her experiences with service men for household appliances and expressed the thought that the service man is in a most advantageous position to do a constructive job of selling.

Following this talk an outline of the procedure in the employment of veterans through the U. S. War Veterans Rehabilitation Bureau was provided by a representative of the Boston office.

The educational program concluded with a talk and demonstration by Mr. Fred Binns of the Virginia Smelting Company, whose simple explanation of the components comprising the various refrigerant gases was well received.

The convention adjourned to partake of dinner and enjoy the entertainment by artists of Radio Station WEEI.

The dinner speaker was Donald Willard of the editorial staff of the Boston Globe, who related some humorous stories regarding the trials of a newspaper man.

HOUSTON CHAPTER CLOSES CHARTER

WITH a really impressive close of the year 1944, Houston Chapter of Houston, Texas, submitted the names of 64 men to be charter members. A very enthusiastic group of men have been attending these preliminary meetings. Through the efforts of those first to get interested, an additional twenty-eight members were secured before closing the Charter.

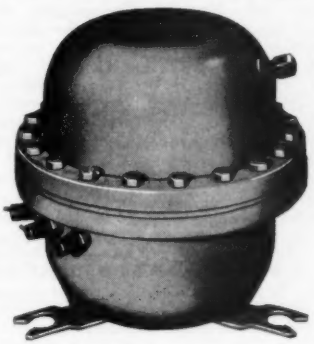
Guidance of the Chapter's formative period has been under the able leadership of W. A. Timmerman, temporary President, and E. E. Smith, temporary Secretary. Mr. Smith announces that the next meeting is to be held January 9th.

Let Us REBUILD Your Old Pumps NOW

● At this time Grunow has a better opportunity to help you put your stock in order for the rush period. So send us your old stators and pumps now for Grunow factory rebuilding service. These pumps are completely rebuilt by experienced Grunow craftsmen and are tested for durable, serviceable operation. The care and attention given to their assembly enables Grunow to guarantee these pumps to give satisfactory performance.

Write for name of your local Distributor!

Send for Grunow Service Bulletin
Price 50c

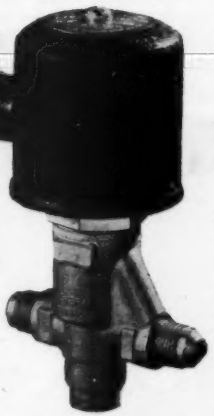


Grunow
AUTHORIZED SERVICE, INC.
4315 W. Fullerton Avenue, Chicago, Illinois

FACTORY TESTED PARTS

FOR EFFICIENT REFRIGERATION

K-20-5 MAGNETIC VALVE



General Controls' series K-20 Valves have many uses in the domestic and industrial fields, for controlling air, water, gas, light oil, and refrigerants. For applications where single needle port sizes provide ample flow capacity. Simple, practical construction and design. Single-seated; two-wire, current failure, packless, free of A.C. hum. Any voltage A.C. or D.C. Coils removable while valves are under pressure.

● K-20-5 is specifically designed for control of refrigerants such as sulphur dioxide, freon, methyl chloride. Also controls air, water, gas and light oil. Especially recommended for "fractional" tonnage installations where constant tight shut-off is necessary. Operates at high pressure, insuring positive control of liquid and suction lines. Valve seats against bronze insert closing with flow, thus increasing seating pressure. ⅜" I.P.S. Port size 5/32". Die-forged body, bronze and stainless steel. Maximum operating fluid temperature 240° F. Brazed tube heads leak-proof, even with coil burning.

Write for Catalog 52

GENERAL CONTROLS
801 ALLEN AVENUE • GLENDALE 1, CALIFORNIA
Branches: Boston • New York • Philadelphia • Cleveland • Detroit
Chicago • Dallas • Denver • San Francisco

R.S.E.S. Chapter Notes

CHICAGO CHAPTER

Chicago, Ill., Dec. 12—The meeting was attended by about thirty men who showed considerable interest in the motion picture presented by Goetz Gasket Company. The picture was narrated by Lowell Thomas and depicted the history and manufacturing facilities of the company. It was supplemented by a talk from Mr. Hoxworth, the Chicago representative.

The Chapter has decided to hold its 1945 meetings in the Morrison Hotel with the exception of a special affair to be held at the Hamilton Hotel January 23. This program will be conducted by the General Electric Company, presenting movies of several models of G. E. Refrigerators. A buffet supper will be served. During last year the chapter joined the Illinois State Association.

SAN DIEGO CHAPTER

San Diego, Calif., Dec. 20—The meeting was held in a banquet room of the San Diego Club with an attendance of thirty-one. After the dinner, the business session was opened by President Friedrichs, and the following officers elected: *President,* R. E. French; *Vice-president,* E. A. Davis; *Secretary-Treasurer,* M. R. Hanks; *Sergeant-at-Arms,* L. Benintende.

Several visitors from out of the State were introduced. The Educational program was based on a problem involving a walk-in cooler of given dimensions and a stated product load. The members were asked to figure the coils, lines, valves, and condensing units to take care of the job. Many interesting comments and questions were presented. Other meetings of this nature are scheduled.

MOUNT ROYAL CHAPTER

Montreal, Canada, Dec. 12—At the regular meeting held in the Knights of Columbus Hall, the members elected new officers for the year as follows: *President,* Ovila Fabien; *First vice-president,* Gordon Roe; *Second vice-president,* R. A. Turner; *Recording Sec.,* L. Letourneau; *Corr. Secretary,* D. S. Greenberg; *Treasurer,* R. Breault; *Sgt. at Arms,* Lalonde; *Educational Chairman,* G. Forget. *Board of Directors:* L. P. Tremblay, H. Milne, B. Lacerte, R. McCullough, Mac Turner. *Auditor,* L. P. Tremblay, *Entertainment Chairman,* Mr. Gendron; *Membership Chairman,* C. Benoit.

Mount Royal Chapter will be host to the convention of the Interprovincial Association March 18 and 19th.

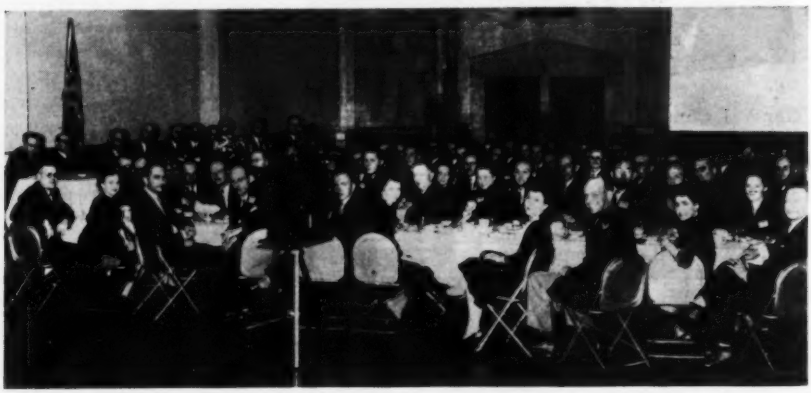
CORN BELT CHAPTER

Bloomington, Ill, Dec. 20—The meeting was held in the Rogers Hotel for the purpose of electing officers for the coming year. The Nominating Committee recommended that the present officers be reelected, with the exception of the Treasurer, who no longer lived in the jurisdiction of the chapter.

Ralph Porter gave a report on the State Board Meeting held at the Drake Hotel, and of the enjoyable time had by all at Goldberg's Christmas Party. He also announced that the 1945 annual meeting would be held at Bloomington.

DES MOINES CHAPTER

Des Moines, Iowa, Dec. 22—Members and their guests gathered for their annual Christmas party at "Neal's Bit of Reo." Wholesalers were invited as well as the regular members. Prizes were awarded for Bingo. Supply houses donated some very attractive door prizes. Three short skits were followed by dining and dancing.



Members and guests at banquet held under auspices of Montgomery Chapter R.S.E.S. Many from surrounding states attended this state meeting, November 26 and 27, 1944

VISOLEAK FINDS 'EM

WHOLESALE PRICES		CASE LOTS	
4 ounce bottle	$ 1.00	48 bottles	SAVE 10% ON CASE LOTS
8 ounce bottle	1.75	24 bottles	
1 pint bottle	3.00	24 bottles	
1 quart bottle	5.00	12 bottles	
1 gallon can	16.00	6 cans	

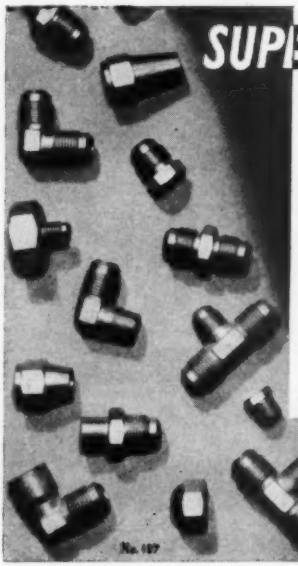
RED SPOT FURNISHES CLUE TO REFRIGERANT LEAK DETECTION

VISOLEAK is a finely-treated colored refrigerant oil which penetrates every nook and cranny of the system. The leak is indicated by a red stain – similar to the discoloration on a carburetor in which ethyl gasoline has been used. Can be used *safely* and *effectively* with any type of refrigerant. See your jobber today. If he has not stocked Visoleak write for complete information.

WESTERN THERMAL EQUIPMENT CO.

5141 ANGELES VISTA BLVD.
LOS ANGELES 43, CALIF.

SUPERIOR QUALITY FITTINGS



. . designed especially for use in refrigerating systems where they must withstand wide fluctuations in temperature, plus considerable vibration. Machined from brass forgings and relief-annealed extruded brass rod to assure uniform density—maximum strength—freedom from season cracking—total absence of seepage leaks.

All threads machined to medium fit (SAE Class 3). Flare threads and faces protected by cardboard ferrules.

SUPERIOR QUALITY FITTINGS are recommended for, and used extensively by refrigeration, machine tool, marine, refining, liquefied petroleum gas, and many other industries.

If you haven't a copy of Catalog R2, Request one today

SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA

Offices in Principal Cities • West Coast Stock: Los Angeles (15) • Jobbers Everywhere

PROVIDENCE CHAPTER

Providence, R. I., Oct. 11.—The meeting was held at Lutz Engineering Company and was attended by fifteen members. A committee was appointed to obtain a permanent meeting place.

It was suggested that the Chapter send Christmas packages to the members now in the service and to remit their dues. They will be notified of this action.

Two new applications for membership were presented and are to be acted on before the next regular meeting.

CLEVELAND CHAPTER

Cleveland, Ohio, Dec. 16.—This meeting was planned as the annual Christmas Party given in honor of the children. All those attending, including the grown-ups, spent a grand evening. All the children were given presents and several very useful door prizes were given to the adults.

The accompanying pictures substantiate the statement that all enjoyed themselves. Special credit must be given to the Entertainment Committee consisting of, Lawrence Gardella, Paul Spring, who arranged for the wonderful floor show, James Downs for the refreshments, George J. Schmidt in charge of tickets, sales and Walter E. Wright who arranged for photographs.

NIAGARA FRONTIER CHAPTER

Buffalo, N. Y., Dec. 8.—The regular monthly meeting was held in the Lafayette Hotel. Applications for new members were read and referred to the Membership Committee. The meeting was then turned over to Bill Goeckel, who introduced Paul Domke of the Mueller Brass Company. Mr. Domke gave a very interesting talk on filters, dehydrators, and heat exchangers.

MAGNOLIA CHAPTER

Jackson, Miss., Nov. 8.—The meeting was held at the G.E. Supply Corporation offices. E. B. Guess, with the Mississippi Power and Light Company, presented charts on "Mississippi—America's State of Opportunity." Along with the charts was information showing the potential business that could be obtained when electrical lines are extended and adequate wiring installed.

Banquet pictures of the annual Christmas party given by Cleveland Chapter R.S.E.S. in honor of the children of the members. Guests and their children also attended

ANOTHER "First" FOR KRAMER!

1st in Service . . . 1st in Values

NOW FIRST WITH THE NEWEST, MOST UP-TO-DATE CATALOG

Not our old issue revised or "made over"—but a *completely new* Catalog from cover to cover.

Featuring Nationally Known Lines of

REFRIGERATION
PARTS • TOOLS • SUPPLIES

WRITE FOR YOUR COPY NOW!

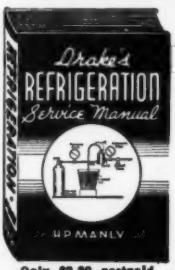
Reserved exclusively for the Wholesale trade. Please send proper business identification with your request.

• OUR NEW PHONE •
RANdolph 6288

FRED C. KRAMER COMPANY
212-214 N. JEFFERSON STREET
CHICAGO 6 • ILLINOIS

Member of The National Refrigeration Supply Jobbers Association

You'll find the answer
IN THIS *NEW* REFRIGERATION BOOK



Only $2.00 postpaid. 300 pages. 138 illustrations.

1. This new 1945 Refrigeration Service Manual contains complete information on all recent developments in household and small commercial refrigeration. Written by an authority in the field . . . covers every angle . . . installation, testing, trouble shooting, repair, replacements as well as refrigeration for air conditioning systems. **Even includes gas refrigeration.**

300 pages of valuable data and 138 diagrams, charts and illustrations make this volume a ready source of vital information for the beginner or experienced professional man in refrigeration..**$2.00**

OTHER "*MONEY MAKING*" BOOKS

2. PRACTICAL ELECTRICITY AND HOUSE WIRING: Excellent for home repair work. 200 pages 227 illustrations **$1.50**
3. CYCLOPEDIA OF RADIO AND ELECTRONICS: 1000 pages. 1178 illustrations. 130 tables and 105 graphs plus over 500 separate listings made especially for this book **$5.00**
4. PLUMBING INSTALLATIONS AND REPAIR: For the handy man around the house . . . or service men. 200 pages. 153 illustrations **$2.00**
5. THE SLIDE RULE AND LOGARITHMIC TABLES: 200 pages, illustrated. Explains use of slide rule and short cut log tables. Even includes 10 place log tables **$1.50**
6. MATHEMATICS FOR READY REFERENCE: 224 pages and plenty of illustrations explains short cuts and various math problems. Excellent reference book **$2.00**

GATEWAY PUBLISHING CO.
Dept. R-1, 53 W. Jackson Chicago 4, Ill.

FIVE DAY TRIAL OFFER

Send for your copy today . . . use the convenient coupon . . . if you're not completely satisfied after you've had the book five days, return it and your money will be promptly refunded.

GATEWAY PUBLISHING COMPANY
Dept. R-1, 53 W. Jackson
Chicago 4, Ill.

OK. Send me the books I've checked C.O.D. (plus small postage fee) . . . or remittance enclosed and Gateway pays the postage. I may return the books within 5 days if they are not completely satisfactory and my money will be refunded.

1 2 3 4 5 6

Name .....

Address .....

City ..... Zone..... State.....

SPRINGFIELD CHAPTER

Springfield, Ill., Dec. 20.—This being the regular meeting for the annual election, the following officers were elected: *President,* Lawrence Mathies; *First Vice President,* J. J. Kline; *Second Vice President,* Gene Kresse; *Secretary,* Arthur Hammond; *Treasurer,* Jas. K. Farrelly; *Sgt. at Arms,* Adolph Pasquale. *Board of Directors:* A. L. Fait, Edw. P. Greig, and John Pokara. Applications for six members were accepted.

DAYTON CHAPTER

Dayton, Ohio, Dec. 7.—The meeting was held at Allied Parts office. The following officers were elected: R. E. Wegner, *President;* G. H. Brock, *First Vice President;* Geo. Click, *Second Vice President;* Delbert R. Goll, *Secretary;* G. E. Kibler, *Treasurer;* D. D. Denny, *Educational Chairman;* Geo. O. Snyder, *Sgt. at Arms. Board of Directors:* Lee Sunderhaus, Geo. Click, and H. R. Shoupp.

TOLEDO CHAPTER

Toledo, Ohio, Dec. 13.—The meeting was held at Redman Hall for the purpose of electing officers for the ensuing year. The officers elected were as follows: *President,* Lloyd Sabin; *Vice President,* Hohn Murphy; *Secretary* and *Treasurer,* Alvin Murphy.

Motion pictures were presented for the members' wives while the business meeting was in session. At the close of the meeting refreshments were served and Christmas gifts were exchanged.

WYOMING VALLEY CHAPTER

Wilkes Barre, Pa., Dec. 11.—At this meeting the following officers were elected for the year 1945: *President,* Pat Maneval; *Vice President,* Thomas Hughes; *Secretary,* John Selina; *Treasurer,* Walter Wells. *Board of Directors:* Louis Harris. The Membership Committee reported favorably on the applications of three men and they were accepted as members.

CANADIAN CAPITAL CHAPTER

Ottawa, Ontario, Oct. 31.—The meeting was opened by H. Arthur, President, who introduced Mr. Marshall, Mr. McCracken and Mr. Condie of the Interprovincial Ass'n., and Mr. Sneath of Ontario Maple Leaf Chapter. Mr. McCracken reviewed the accomplishments of I.P.A. relative to gasoline rationing, deferment of army call up, and tires for essential refrigeration servicing.

December 1.—The meeting was held in Salon "A", Chateau Laurier and the recommendations of the Nominating Committee were accepted and the following elected: W. Lowry, *President;* F. Turner, *Vice President;* E. Hills, *Treasurer;* R. Robertson, *Sgt. at Arms; Membership Comm. Chairman,* J. Morrison; *Entertainment Chairman,* A. C. Brownlee, and *Educational Chairman,* W. H. Podd.

BOSTON CHAPTER

Boston, Mass., Nov. 14.—The meeting was held at the Hotel Manger with President Stenmark presiding. Applications for five new members were accepted: Herbert P. Jones, Thomas A. Rosati, Walter K. Van Duzer, H. B. Whitmarsh and J. N. Hebert.

The speaker of the evening, Jess Rivers of Frigidaire, gave a talk on the preservation of meats and perishable foods.

ONTARIO MAPLE LEAF CHAPTER

Toronto, Ont., Dec. 15.—The meeting was held in the King Edward Hotel. Speaker for the evening was W. Wyatt, Manager of Servel (Canada) Ltd. He presented an interesting motion picture entitled "The Story of Gas Refrigeration."

TWIN CITIES CHAPTER

St. Paul, Minn., Dec. 5.—The meeting was called to order in the Andrews Hotel by President MacCafferty. Applications of six prospective members were presented to the Membership Committee.

The following officers were then elected for 1945: *President,* Don Frank; *First Vice President,* Gaylord Randall; *Second Vice President,* Jack Ehlers; *Secretary,* Dean Holmes; *Treasurer,* Earl Sigafoos. *Board of Directors:* Art Palen, Otto Chermak, Joe Parupsky. *Sgt. at Arms,* Irwin Baldwin.

Ladies Auxiliary

NIAGARA FRONTIER AUXILIARY

Buffalo, N. Y., Dec. 8.—The regular monthly meeting was held at the home of Mrs. Edward Orsolitz. Mrs. Muller distributed books containing samples of blankets for the Blanket Club and announced she would obtain a speaker for the next meeting to explain the activity of the club and how it is operated.

MISSOURI VALLEY AUXILIARY

Omaha, Neb., Nov. 9.—The meeting was held at the home of Mrs. Lucht. Vice-president Deitz called the meeting to order and the minutes and treasurer's report were read and approved. Those present agreed that it would be a worthy cause to donate cakes or cookies to the U.S.O. Mrs. Maguire was delegated to ascertain what day would be most suitable for the donation.

KANSAS CITY AUXILIARY

Kansas City, Mo., Nov. 11.—Mrs. R. E. Meeker, President presided at the meeting held at the offices of the Temperature Engineering Corporation. Mrs. Smith reported that Christmas packages had been mailed to members in military service.

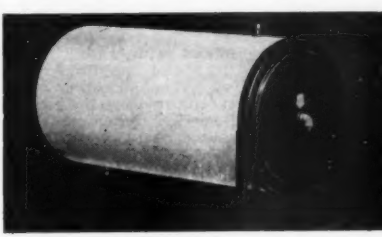
Proceeds from the sale of Christmas cards amounted to the sum of $128.90. The usual exchange of Christmas gifts was arranged before the close of the meeting.

NORMAL SUCTION PROCESS WATER COOLERS

6 to 25 gallon capacities.

Compact in design... can be mounted on floors, walls or ceilings.

Suitable for drinking water bubbler service, cafeteria or restaurant glass filler service.



DAY AND NIGHT

WRITE FOR LATEST DATA

COOLER DIVISION
DAY & NIGHT MFG. CO.
MONROVIA • CALIFORNIA
FACTORY REPRESENTATIVES
NEW YORK — A. C. Homeyer, 682 Bdwy. • CHICAGO — Marc Shantz, 565 Wash. Blvd.
ST. LOUIS — B. H. Spangler, 3331 Market St. • ATLANTA, GA. — J. E. Parker, 2341 Peachtree, N. E.

New Equipment .. Processes Appliances .. Methods

Information under this heading is furnished by manufacturers of the articles listed and is not the opinion of the Editor.

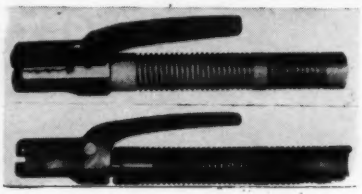
New Electrode Holder

AFTER long use and development in its own shops, Pacific Engineering Corp., 3123 San Fernando Road, Los Angeles 41, Calif., is now marketing the Mor-Weld, a revolutionary, new type of Electrode Holder. Mor-Weld was designed for hardest services and for sound, clean welds of high quality.

One of its innovations is the heat-resisting, "Everlast" plastic jaw cover. This new jaw cover, in competitive field tests and later in actual operation, outlasted the conventional types by giving 20 to 30 times longer service. This longer use eliminates the necessity for constant changing and servicing of jaw covers, as well as handle covers. An additional feature is Mor-Weld's flexibility which enables the welding rod to be consumed down to a mere stub without the necessity of bending. Grip holds all rod sizes.

In addition, the quick-change, lever-action jaws can be replaced in less than a minute without tools. All parts are quickly interchangeable because there are no pins nor bolts—which allows for fast servicing and cleaning.

The handle, made of wear-resisting plastic, cannot come off by itself which provides a needed safety feature. Mor-Weld also has been scientifically balanced for faster, easier work. Operators like the ribbed handled design because it keeps cooler under continuous operation. The Mor-Weld holder can be removed quickly from cable so that the welder can place his personal electrode holder in his locker at the end of the day's work.



Mor-Weld, new Electrode Holder

New Stainless Steel Hose Clamps

NEW all-stainless steel Aero Seal Hose Clamps, designed for service where conditions require highest corrosion resistance, are now in production at the Aircraft Standard Parts Co., 1727 19th Ave., Rockford, Ill., according to an announcement by the company. At present production is in only the most popular sizes—M12, M16 and M20—but the line will gradually be increased to include all nominal sizes from ½ in. through 4¼ in.

Aero-Seal Stainless Steel Hose Clamp

Several distinctive engineering features have been incorporated in the new hose clamps. Although lighter and thinner, the stainless steel bands have greater strength and flexibility than carbon steep clamps, and have the advantage of being made entirely of rust-resistant material. A new mechanically interlocked saddle permits elimination of welds at that vital point. As a consequence of these features, durability and holding power are increased in the new model.

All the basic superior qualities of the "Aero-Seal" design are also included in the stainless steel clamps—smooth and powerful worm gear drive, compact housing, no loose parts, openable band, vibration-proof holding, wide range, long take-up, uniform pressure, no distortion of thin-wall tubing, and ability to hold high pressures without leakage.

Paint Remover

A WATER-soluble paint remover known as Stripper L-780, has been developed by Turco Products. According to the manufacturer, washing off an application of the stripper leaves a clean surface requiring very little treatment to prepare for further processing.

The product is claimed to be non-corrosive on metals and non-injurious to wood, causing no warping. Further, it is non-inflammable. Because the stripper is soluble in water, brushes and cleaning equipment can be quickly cleaned for re-use. Surfaces which are oil coated or covered with road film need no precleaning before applying L-780.

Application is made with a brush or spray and allowed to remain for five to twenty minutes. The surface is then scrubbed with a water saturated brush and immediately followed by washing with a hose.

Synthetic Resin Adhesive

A NEW adhesive, "Plastic Cement," has been announced by Paisley Products, Inc. In appearance it is a soft, white fluid cement that may be used as prepared or reduced with water. When dry, it is a semi-transparent, glossy, flexible coating said to have excellent heat-sealing properties. When used as a bonding agent, it can be applied to one or both surfaces before putting them together.

The adhesive is compounded of resin bases with non-resin materials.

Some Men Just Don't (Won't or Can't) See—

CERTAINLY there are plenty of men in refrigeration who don't, won't or can't see any need for supplementing what they already know with U.E.I.

BALANCED TRAINING

Funny part of it is that these fellows do seem to get by somehow. BUT consider men—in sales, service, administrative, and executive jobs in refrigeration—who have not been content to merely get by! They have fortified themselves with training—the kind of practical, sensible U.E.I. training which for the past 18 years has been helping men get farther faster in practically every branch of refrigeration. How would you bet on *them* in 1945? Do you think they'll make more money than the boys who "know it all"?

The main point is this: If you sincerely believe you can make more headway in your refrigeration job or business with the help of more knowledge—knowledge which you can get through home study plus actual shop work—and if you are not wearing a set of blinders which keep you from seeing the whole picture of the future in refrigeration, we invite YOU to write for free FACTS about U.E.I. training.

MAIL THIS COUPON TODAY

FREE FACTS

UTILITIES *Engineering Institute*
1314 W. Belden Ave.
Dept. 45, Chicago 14, Ill.

Please give me more information about Refrigeration and Air Conditioning Training, as promised in your "Refrigeration Service Engineer" January, 1945 advertisement.

Name.....

Address.....

City.....Zone.....State.....

HOW MANY METER-MISERS IN YOUR AREA "NEED GAS"?

Have you been allowing your competitor to get all this FRIGIDAIRE service because you have had no "gas"?

Efficient service demands a stock of replacement parts for immediate use. Just as important is your supply of

HERVEEN

the IDEAL REPLACEMENT GAS

Servicing Meter-Misers is no different from the servicing of other units of similar design. . . . The main "bottleneck" has been in the supplying of the original refrigerant. HERVEEN makes possible the efficient service and satisfactory operation of Meter-Miser refrigerators.

Send for our bulletin on "Procedure for Recharging Meter-Misers with HERVEEN."

For deliveries, see your local jobber or write to

MODERN GAS CO., Inc.
Manufacturers & Refiners
1084 BEDFORD AVE.
BROOKLYN 5, NEW YORK

SERVICING THE COLDSPOT

(Continued from page 23)

and the unit should be returned to the factory. Tests for shortage of oil as described under noisy compressor will check that possibility. If short of oil, return unit to factory.

Tightness from overheating is usually not the result of close fittings parts, but rather the result of high head pressure against which the pump must work.

The high pressure is a natural result of unusual high heat and may be caused by a dirt-clogged condensed. If air has been drawn into the system, it will expand from normal heat and cause an increase in pressure which builds up until the compressor turns hard. It is because air does not condense into liquid at the pressure reached in the Coldspot that it continues to expand and build up pressure as it is heated. SO_2 gas tends to expand when heated but as its pressure rises, some of the gas is condensed and the pressure rise is only a part of what it would be without the condenation. Air may be purged from the unit by using a gauge adapter on the purging fitting on the top of the receiver.

S S S

REFRIGERATION MECHANIC TELLS ABOUT SERVICE OVERSEAS

(Continued from page 33)

Of the operations of the mobile units that carried perishables to the front, Sergeant Fox says that on occasion they would get as close as two miles from the battle lines. One time in North Africa, food was being hauled to a ration dump near the front. Enemy strafing planes came over resulting in the loss of one tractor-trailer. The driver and assistant observed the planes approaching and leaped from the cab of the tractor which went over an embankment. Things got so hot at the dump that two days later it had to be moved further to the rear.

Two of the officers in the refrigeration unit were graduates of the Camp Lee Quartermaster Officer Candidate School; Lt. Samuel K. Boot of Williamsburg, Va., and Lt. Conrad C. Gilliam of Pratt, Kansas.

Sergeant Fox's home is at 111 Huntington Place, Cincinnati. In civilian life he was a refrigeration mechanic in Clermont County, Ohio. His mother, Mrs. George L. Fox, resides in Amelia, Ohio.

PREDICTIONS FOR 1945

(Continued from page 19)

Refrigeration service engineers can do much to ease the situation as it now stands by continuing the good work they have been doing, with so little new material and equipment available.

Parts Situation to Be Tighter

The parts situation may be as serious as in the early days of 1942. It is quite possible copper will be diverted to munitions manufacturers to meet the present and future demands for more shells. The heavy demand from all branches of the armed service may reflect in the procurement of materials other than copper bearing products.

S S S

DOLE ANNOUNCES PROFIT SHARING PLAN

AT A recent meeting of executives and employees of the Dole Refrigerating Co., Chicago, Ill., President E. J. Tweed announced a profit sharing trust for all employees. Seventy per cent of the employees, who had completed one year of service on November 30, 1944, participate in the plan the first year.

Any employee of the company in the armed forces at present or who enters later is entitled to the same benefits if he returns to the company six months after his discharge and remains in the company's employ six months thereafter. Each year the company will contribute 25 per cent of the net profits to the fund. No contributions are made by employees.

Coupled with the trust fund is an ordinary life insurance plan which gives eligible employees insurance equal to 5 per cent of their basic salary.

S S S

CHICAGO GM APPOINTMENTS

APPOINTMENTS in the Chicago territory Frigidaire Division of General Motors has been announced by W. I. Buchanan, Chicago branch manager as follows: G. W. Trask, sales manager of commercial and air conditioning products; A. J. Pizza, sales manager of national user products and ice cream cabinet equipment; C. W. Kirby, appliance sales manager. They will make their headquarters in Chicago. F. M. Drake, former field representative is now sales manager of the Milwaukee District Office, with headquarters in Milwaukee.

A DREAM COME TRUE!

Here it is—the kind of a refrigeration tools, parts, and equipment catalog you've always wanted. Put out by AIRO, of course. Write for yours today sure!

Dept. A

AIRO SUPPLY CO. (NOT INC.)
WHOLESALE ONLY
2732 N. Ashland Avenue
Chicago 14, Illinois

MAYFLOWER

UNITS AND PARTS

COMPLETE stocks of genuine Mayflower Condensing Units and Parts. Service men, consult your jobbers, or write us direct. Jobbers, we solicit your inquiries.

MAYFLOWER
PRODUCTS, Inc.
13 S. 5th St.
Richmond, Ind.

HAVE YOU READ THE
SERVICE POINTERS
SUBMITTED BY READERS OF THIS JOURNAL!

IN this department you will find many ideas designed to help you in these days of material shortages.

Help us to maintain this mutual exchange of ideas!

If you have not already done so, we suggest that you read the Service Pointers in this issue. Then sit down and let us have your own ideas. Address "Service Pointers"

The REFRIGERATION SERVICE ENGINEER
433 N. Waller Ave. Chicago

Ask your jobber for Aerovox motor-starting capacitors. Select units needed by the Aerovox conversion chart. Or write us direct.

AEROVOX *Capacitors*
INDIVIDUALLY TESTED
AEROVOX CORP. NEW BEDFORD, MASS., U.S.A.
In Canada: AEROVOX CANADA LTD., HAMILTON, ONT.
Export: 13 E. 40 St., New York 16, N.Y. Cable: 'ARLAB

NEW RANCO MANUAL

THE fifth edition of the Ranco Manual No. 899 presenting exact replacement domestic controls and other valuable control data has just been announced by Ranco, Inc., 601 W. Fifth Ave., Columbus 1, Ohio. This pocket size booklet contains six sections. The introduction briefly outlines the history of the company and gives data on the motor overload elements and their ampere ratings.

Section two describes the "Story of Power Elements," their construction, charging and catalog data for ordering, followed by "Application Data." "Service Instructions" are covered in Section Four on all the types made. This section includes the application of special controls on commercial fixtures. Obsolete models are shown in Section Five with data on adjusting and factory replacement policy.

The Manual concludes with a tabulated listing of domestic units and the type of replacement control available.

BINDER CO., NEWARK, N. J., SOLD

T. W. BINDER CO., Newark, N. J., wholesale refrigeration supply jobbers, has been acquired by Theodore and Sidney Yecies. The company will operate under the same name and all the employees will continue in their present positions.

Mr. Yecies will devote his entire time to this business. The company will continue to handle refrigeration and air conditioning supplies, to be sold exclusively to the refrigeration industry.

Whitman Freeman who has been with T. W. Binder Co. as manager for the past twelve years will continue to serve the trade in that capacity.

SUCTION PRESSURE

(Continued from page 41)

High suction pressure may also come from leaking suction plates in the compressor. This, however, is very unusual on Airtemp equipment.

Low suction pressure may be caused by too high a superheat adjustment on the expansion valve, that is, the valve is not open wide enough to pass refrigerant through the entire surface of the evaporator. Failure of the expansion valve power element will also cause low suction pressure. Other factors influencing this suction pressure are restricted air filters, low refrigerant charge, and possible restrictions in the liquid line.

GENERAL MOTORS ANNOUNCES ADVANCEMENT OF QUIGLEY

THE appointment of Clarence E. Quigley to handle special assignments in the appliance sales department has been announced by the Frigidaire Division General Motors Corp. An employee of General Motors Corporation since 1920, Mr. Quigley entered the services of the Frigidaire division in 1926. He was first employed in the educational department and moved from there to sales division in 1927. During his 17 years with Frigidaire he has occupied many important sales posts having been regional manager, water cooling manager, assistant manager commercial sales and others. Before being transferred to his present assignment he was for the past two and one half years connected with various Frigidaire war production activities.

DRESSER INDUSTRIES EXPANDS

ACQUISITION of three new companies, expanding Dresser Industries, Inc., to 13 members, has been authorized by Dresser directors, President H. N. Mallon announced recently.

The companies to be acquired are the Day & Night Manufacturing Co. of Monrovia, Calif., the Payne Furnace and Supply Co., Inc. of Beverly Hills, Calif., and Kobe, Inc. of Huntington Park, Calif. The acquisition will be accomplished by an exchange of stock and will be effected about February 1, 1945 if approved by stockholders of the three companies. Dresser stockholders recently authorized an increase in capital stock to 600,000 shares, a portion of which is unissued and will be used to consummate the agreement.

FRIGIDAIRE SERVICE APPOINTMENTS

The following appointments in the Service Department of General Motors Corp. has been announced by Paul V. Sprout, Service Manager, Frigidaire Division. C. P. Ogden has assumed the position of supervisor of service parts sales and the field contact division; R. K. Eley, that of supervisor of the service technical division, in complete charge of training, service literature, field shop operations and field and factory technical contacts; R. V. Leslie, the post of Supervisor of the service inventory control division, replacing A. J. Ritten who is now a member of Frigidaire's market research and organization department.

WP
PRESSURE ACTUATED REGULATING VALVES

Individually tested for efficient, economical operation. WP regulating valves may be mounted in any position and will give lasting, trouble-free performance. Brass body, two ply power bellows and corrosion resistant materials for all internal parts. They are designed not only to start and stop the flow of water but also to feed the economic amount of cooling water to secure the proper condensing pressure without waste. The water flow increases and decreases with the rise and fall of actuating pressure.

WP regulating valves are available in ⅜", ½" and ¾" FPT sizes and other valves of other types are available in sizes ranging from ¾" to 2" FPT.

Write for a copy of our latest catalog.

Electrimatic
2100 INDIANA AVENUE
CHICAGO 16, ILL.

HERE'S YOUR FUTURE'S MOST PROFITABLE *Sales Leader*

THE *New* BEN-HUR FARM and HOME *Freezer*

HOME FREEZERS promise a future market of 500,000 units a year! The new BEN-HUR Farm and Home Freezer will be ready to open this profit opportunity to YOU.

ALREADY laboratory tested—proved under all operating conditions — designed by experienced engineers and famous industrial artists, BEN-HUR Farm-Home Freezers will offer a complete line to suit all home needs.

CHECK YOUR COMMUNITY and discover the ready demand for home freezing and storage — a waiting market to profitably serve with BEN-HUR Farm-Home Freezers.

BEN-HUR distributors are being appointed. To get in on the ground floor, write today.

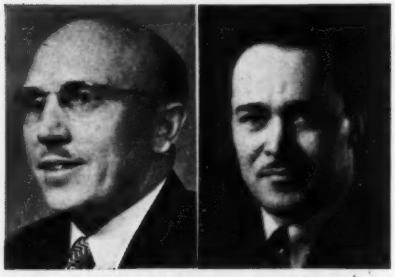
BEN-HUR MANUFACTURING CO.
534 EAST KEEFE AVENUE
MILWAUKEE 12, WISCONSIN

BEN-HUR FARM LOCKER PLANTS

SERVEL ANNOUNCES CHANGES IN SALES PERSONNEL

THE appointment of William J. Aulsebrook as sales manager of the Electric Refrigeration Division of Servel, Inc., Evansville, Ind., has been announced by Geo. S. Jones, Jr., vice-president in charge of sales.

Mr. Aulsebrook has been with the Electric Refrigeration Division since 1935, and before that time was associated with the Servel Mountain Division office in Denver, Colorado. He is an associate member of Refrigeration Service Engineers' Society and the American Society of Refrigerating Engineers.



WM. J. AULSEBROOK R. E. DAVIS

The appointment of R. E. Davis as service manager of the Air Conditioning Division of Servel has been announced by John K. Knighton, air conditioning sales manager. Mr. Davis joined Servel in 1931 prior to which time he had been associated with Servel distributors in New Orleans, La., and Oklahoma.

Since joining the company he has served as field service engineer, export representative in Europe and the Near East, and was in charge of Educational and Service Activities on commercial gas refrigeration.

* * *

QUESTIONS AND ANSWERS

(Continued from page 35)

before installing a thermostat for this purpose.

The most logical method of setting the pressure control is to have it operate a blower type coil on an 8° to 10° T. D. whereas gravity coils are operated on 15° to 20° T. D.

Adjustment of the expansion valve is not likely to help the situation but it might be possible to add a drier coil on the outlet of the evaporator to assure the complete flooding of the evaporator coils.

BOULWARE JOINS G.E. BIRGE RESIGNS AS VICE-PRESIDENT

L. R. BOULWARE, former operations vice chairman of the War Production Board, has been appointed to the staff of Charles E. Wilson, president of the General Electric Company, as a consultant on marketing and merchandising, effective January 1.

Simultaneously with this announcement by Mr. Wilson came word of the retirement on December 31 of N. R. Birge, a vice-president of the company who for many years has been responsible for the operations of G-E affiliated companies. Mr. Boulware will assume the latter responsibility.

Previous to his connection with the War Production Board, Mr. Boulware had been vice-president and general manager of both Carrier Corporation and the Celotex Corporation, and General Sales Manager of the Easy Washing Machine Corp. At various times he was a factory manager, purchasing agent, and comptroller in a machine tool plant. He once taught accounting and commercial law at the University of Wisconsin, of which he is also a graduate.

* * *

SPOEHRER-LANGE NOW SPORLAN

THE SPOEHRER-LANGE COMPANY, 3725 Commonwealth Ave., St. Louis, Mo., announced that effective January 1, 1945, the new name of the company is Sporlan Valve Company. The purpose of this change is to make the company name conform with the trade name Sporlan under which they have manufactured control devices for refrigeration and air conditioning for the past eleven years. The change in name in no way affects the policies, management, organization or financial structure of the company.

The company manufactures solenoid valves, solenoid pilot controls, modulating pilot controls, refrigerant distributors, and the only thermostatic expansion valves with selective charges.

* * *

NEW DISTRIBUTOR FOR SHOP EQUIPMENT

THE Chase Refrigeration Supply Co. recently has been appointed a distributor for The Lyon Metal Products Company of Aurora, Illinois, manufacturers of complete shop equipment. Deliveries of this equipment are very reasonable on any rated order carrying AA5 or better. A complete shop equipment catalog is available to all members of the industry on request.

PARTS AND SUPPLIES FOR REFRIGERATION
THE HARRY ALTER CO.
1728 S. Michigan Ave. Chicago, Ill.
Two Big Warehouses to Serve You
134 Lafayette St. New York, N. Y.

Controls Repaired & Rebuilt

Just Mail In Controls — We Handle The Rest

COMMERCIAL—DOMESTIC—INDUSTRIAL

One Year Guarantee
Each Control Reset and Cycle Tested

Domestic Cold Controls (Modern Type)	$2.00
Commercial Controls (Pres. or Temp.)	2.50
Commercial Dual Controls	3.00
Automatic Water Valves	2.00
Automatic Expansion Valves	1.75
Thermostatic Expansion Valves	3.00

All Prices F.O.B. Chicago and subject to change without notice.

ACME CONTROL SERVICE
4613 N. Kedvale Avenue—Chicago 30, Illinois
Phone AVEnue 5533

AIRCO

Refrigeration Parts

See who I depend on for my replacement parts and supplies. They ship my ORDER the same day. Try them.

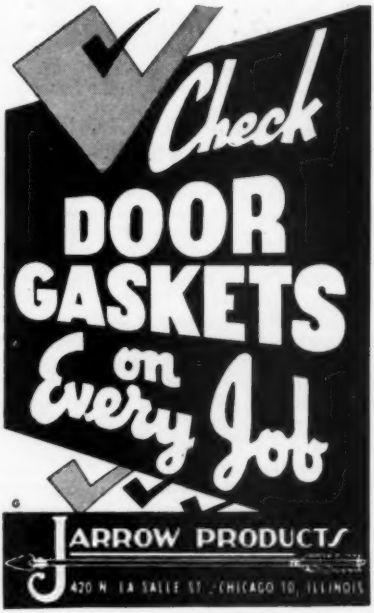
1374 W. Notre Dame St., Montreal, Canada

1944 CATALOG

Write for your copy on your letterhead

SERVICE PARTS CO.

2511 Lake St. **Melrose Park, Ill.**



G.E. FORMS CHEMICAL DEPARTMENT

A NEW department in the organization of the General Electric Company, to be known as the chemical department, has been created by the Board of Directors and Dr. Zay Jeffries, technical director of the company's lamp department, has been elected as vice president in charge. This announcement was made in New York by President Charles E. Wilson.

In making the announcement, Mr. Wilson stated the creation of the new department to become operative January 1 was in accordance "with the company's policy of modifying the organization structure to enable us to take full advantage of our opportunities for further growth."

The new chemical department will assume responsibility for the operations pertaining to the resin and insulating materials division and the plastics division of the appliance and merchandise department.

S S S

KRAMER PARTS CATALOG READY

PUBLICATION of the first 1945 Catalog of refrigeration and air conditioning parts, tools and supplies is announced by the Fred C. Kramer Co., 212 N. Jefferson St., Chicago 6, Ill. Completely new from cover to cover, the catalog features nationally known lines of valves, controls, fittings, tools, belts and other items used in refrigeration service and installation work.

Serving industry for over 26 years, the Kramer Co. carries a large warehouse stock of steel and wrought iron pipe in all sizes. In the new catalog are many pages of ammonia valves, fittings and controls along with extra heavy steel pipe, galvanized on the outside only, especially for ammonia applications.

Commenting on the new Catalog, Fred W. Kramer, President of the Fred C. Kramer Co., said, "We have spared neither time nor expense in our efforts to make this one of the finest wholesale parts catalogs in the industry. Rather than revise or "make over" our old catalog we discarded it entirely and the 1945 Catalog is truly a new catalog from cover to cover."

Preparation of the Catalog was handled entirely by C. R. Markham, Refrigeration Advertising Specialist with a background of over eight years experience preparing catalogs, sales promotion campaigns and direct mail literature for the refrigeration industry.

The new Kramer Catalog is reserved exclusively for the wholesale trade and the company asks that proper business identification accompany all requests for catalogs.

The Kramer telephone number has been changed to Randolph 6288 with 12 incoming lines for service calls.

S S S

GENERAL CONTROLS ANNOUNCES NEW APPOINTMENTS

THE appointment of Paul B. Sagar as eastern field engineer for General Controls Co., Glendale, California has been announced. Working out of the Cleveland Factory Branch, 3224 Euclid Avenue, Mr. Sagar will devote the major part of his time collaborating with Eastern appliance manufacturers in working out problems of application and assisting them in test procedures at the American Gas Association Laboratory.

PAUL B. SAGAR

JAMES KING

He is well qualified for this assignment because of his background as test engineer in the Cleveland A. G. A. laboratory. He is a graduate mechanical engineer of the Oregon State University and has served for five years as control engineer with Iron Firemen previous to his present connection with General Controls.

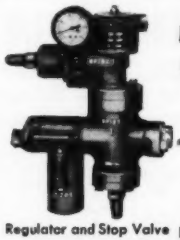
The appointment of James King as field sales engineer in the New York Factory Branch, 101 Park Avenue has been announced. Mr. King will serve users of automatic controls, particularly in industrial fields, throughout Metropolitan New York. His background includes many years of successful sales and service experience with Jenkins Valves in New York and New Jersey. As Jenkins' Texas manager, he directed industrial sales to oil refineries there. More recently he handled industrial oil sales for Pure Oil Company in New York, until his present connection with General Controls.

REFRIGERATION SUPPLIES!

It's Our Job to Keep You Supplied with Parts and We Are Glad to Inform You That Our Shelves Are Well Stocked with the Parts You Require. TRY US FOR SAME DAY SHIPMENT OF YOUR ORDERS.

CHASE REFRIGERATION SUPPLY COMPANY

546-48 W. 119th St. CHASE BLDG. Chicago 28, Ill.



Regulator and Stop Valve

Write for Catalog

Designers and Manufacturers of

AUTOMATIC BACK PRESSURE REGULATING and CAPACITY CONTROL VALVES

SOLENOID VALVES

STA-TITE SAFETY RELIEF VALVES

STRAINERS

HUBBELL CORPORATION
319 N. Albany Ave., Chicago 12, Ill.

CONTROL REPAIR SERVICE

Domestic Controls reconditioned equal to new at a small cost. All work guaranteed for one year. Prices upon request.

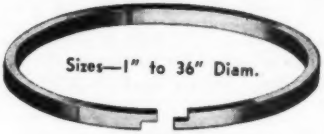
United Speedometer Repair Co.
342 W. 70th Street
New York City 23

DURING THE PAST 25 YEARS *Many Firms have Standardized* ON

AUTO-DIESEL

LADLE TEMPERED PISTON RINGS!

We are proud of the large number of firms that have standardized on AUTO-DIESEL "Ladle Tempered" Piston Rings during the past 25 years. The quality that we have always put into them has resulted in satisfactory performance that is responsible for repeat orders over a period of many years. They are used as original equipment and replacement for stationary and mobile units and for hydraulic and pneumatic operated industrial equipment.



Write for Information

THE AUTO-DIESEL PISTON RING CO.
3157 Superior Ave. CLEVELAND 14, OHIO

QUALITY RINGS SINCE 1921

Dayton

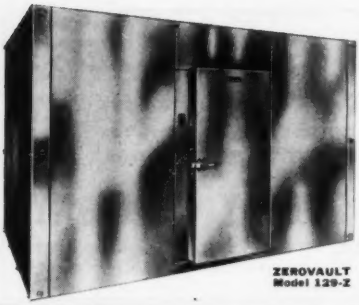
V-BELTS

FOR ALL LEADING MAKES OF HOUSEHOLD APPLIANCES AND OPEN-TYPE UNITS

In the interest of conservation, see that Victory Vital V-Belts are properly installed with rust-free pulleys in correct alignment and with proper tension.

THE DAYTON RUBBER MFG. CO.
World's Largest Manufacturer of V-Belts
DAYTON, OHIO

DAYTON RUBBER EXPORT CORP.
38 Pearl St., New York, N. Y., U.S.A.



ZEROVAULT
Model 129-Z

WILSON ZEROVAULT

STORAGE FOR FROZEN FOODS

● **ZEROVAULT** has a significant place in our post-war stepped-up production schedule of low-temperature equipment.

● **Sectional** in construction, **ZEROVAULT** is easily erected in otherwise inaccessible places . . . is easily enlarged to care for expansion of frozen food distribution facilities. Get full details **NOW** . . . **Write Dept. 14.**

WILSON CABINET COMPANY SMYRNA DELAWARE

AUTOMATIC EXPANSION VALVES

repaired or exchanged
at $1.75 F.O.B. Chicago

☆ ☆ ☆

Until further notice we will be unable to accept other types of repair work.

ALL WORK GUARANTEED FOR 90 DAYS

NEW DUTY
2424 Irving Park Blvd., CHICAGO 18

You can DEPEND on BLYTHE

When it requires ADDITIONAL effort on our part to serve you, we do not "spare the horses" in getting what you want NOW or for future delivery.

An inquiry or order on your letterhead will be promptly and efficiently handled.

W. H. BLYTHE COMPANY
2334 S. Michigan Ave., CHICAGO 16, ILL.

GASKETS — SPEED VICTORY

Write for complete catalog.

● Until Victory is won, war orders come first. Today, our gasket service for every refrigeration need is helping speed war production. Under these conditions, delays in filling other orders are unavoidable.

CHICAGO-WILCOX MFG. CO.
7701 Avalon Ave. Chicago 19, Illinois

DOMESTIC CONTROLS . . . $1.90
AUTOMATIC VALVES . . . $1.50
THERMOSTATIC VALVES . $2.75

REPAIRED OR EXCHANGED

▼

LYK-NU CONTROL SERVICE
2209 N. Karlov Ave., Chicago 39, Ill.

PUT RUST TO WORK!

Brush or spray Nobs Glazecoat directly on rust. Rust aids in forming a permanent thermo-plastic coating that is not affected by water, alcohols, dilute acids, or alkalies. Prevents further rusting. Stands heat to 400° F. Covers about 300 sq. feet per gallon.

Price.....$3.50 per gal. F.O.B. Los Angeles

NOBS CHEMICAL COMPANY
2465 East 53rd Street, Los Angeles 11, Calif.
Seattle San Francisco

DO YOU REQUIRE *Special* PARTS OR EQUIPMENT?

Use Automatic Service on your next parts order

In addition to our complete stock of standard lines, we carry many special items not readily available.

For your convenience our South Side Branch, 809 W. 74th St., is ready to serve you.

Automatic
HEATING & COOLING SUPPLY CO.
647 WEST LAKE STREET, CHICAGO, ILLINOIS

WEST COAST CONTROL SERVICE

Cold Controls · Pressure Switches

One year guarantee on all repairs

Original Factory Specifications

UTILITY THERMOSTAT CO.
4011 Halldale Ave., Los Angeles 37, Calif.

USE "CLEAN-A-COIL"

FOR CLEANING WATER COOLED CONDENSERS

CONSULT YOUR LOCAL JOBBER

STANDARD SOLVENT CO.
CHICAGO

Send for 1944 Catalogue

REFRIGERATION EQUIPMENT CO.
Refrigeration Parts Division
101 E. 24th Street, Kansas City 8, Mo.

WASHER PARTS DIVISION
1430 Walnut Street
Kansas City 6, Mo.

DOLE

VACUUM PLATE

COOLING and FREEZING UNITS

CHICAGO

"IT'S NO MILITARY SECRET"

Out where a man MUST know—where help is not just around the corner—where a man must have the persistence and know-how to stay with the tough ones until they're licked—that's where you'll find Commercial Trades' graduates, trained by us for the U.S. Army. This same Army-approved training is now available to you. Resident courses or Home Study combined with actual shop work. Prepare now to move ahead in a live-wire industry. Write today for free booklet.

COMMERCIAL TRADES INSTITUTE

School of Refrigeration and Air Conditioning

Chicago 6, Ill.
209 W. Jackson Blvd.

Birmingham, Ala.
200 S. 20th St.

Advertisers Index

Acme Control Service 67
Aerovox Corporation 63
Airco Refrigeration Parts 67
Airo Supply Co. 63
Alco Valve Co. 00
Alter Company, The Harry 67
Ansul Chemical Company 1
Audel & Co., Theo. 51
Auto-Diesel Piston Ring Co. 69
Automatic Heating & Cooling Supply Co. 71
Automatic Products Company ..... 36 and 37

Ben Hur Mfg. Co. 65
Blythe Company, H. W. 70
Bonney Forge & Tool Works ..... Back Cover

Chase Refrigeration Supply Co. 69
Chicago Seal Co. ..... Inside Front Cover
Chicago-Wilcox Manufacturing Co. 70
Commercial Trades Institute 71

Davison Chemical Corp. ..... Inside Back Cover
Day & Night Mfg. (Cooler Div.) 59
Detroit Lubricator Co. ..... 2 and 3
Dole Refrigerating Company 71
Du Pont de Nemours & Co., E. I. 12

Electrimatic Valve 65

Gateway Publishing Co. 57
General Controls 53
General Electric Co. 00
Grunow Authorized Service Co., Inc. 53

Henry Valve Company 7
Highside Chemicals Company 6
Hubbell Corporation 69

Imperial Brass Mfg. Co. 13

Jarrow Products 67
Justrite Mfg. Co. 00

Kerotest Mfg. Co. 00
Kramer Co., Fred C. 57

Logan Engineering Co. 00
Lyk-Nu Control Service 70
Lynch Mfg. Co. 43

Marsh Co., James P. 10
Mayflower Products, Inc. 63
McIntire Connector Company 11
Modern Gas Company, Inc. 61
Mueller Brass Company 8

Nash-Kelvinator Corp'n. 4
New Duty 70
Nobs Chemical Co. 70

Peerless of America, Inc. 16
Penn Electric Switch Co. 45

Ranco, Inc. 14
Refrigeration Equipment Co. 71
Refrigeration Surplus Dealers 72

Sanitary Refrigerator Co. 59
Service Parts Company 67
Standard Solvent Co. 71
Superior Valve & Fittings Co. 55

Tecumseh Products Company 47
Temprite Products Corp. 9

United Speedometer Repair Co. 69
Utilities Engineering Institute 61
Utility Thermostat Co. 71

Virginia Smelting Co. 5

Weatherhead Co., the 00
Western Thermal Equipment Company 55
Wilson Cabinet Co. 70

Classified Ads

Rate: Two Dollars for fifty words or less, 30 cents for each additional ten words or less.

FOR SALE—Refrigeration Service Business, established 10 years. Excellent opportunity. Selling because of ill health. Write A. M. Coutant, 101 Roosevelt Ave., Kingston, N. Y., for full details. Price very reasonable.

FOR SALE—250 Frigidaire model "N", "W350", "W233" and "C". All with 110-220 V. 60 cycle, REP. IND. Motors. Remanufactured ice cream cabinets. Send for list and price. EDISON COOLING CORPORATION, 310 E. 149th St., New York 51, N. Y.

WANTED—Refrigeration men for installation and service of domestic, commercial and air-conditioning equipment. Good working conditions, steady employment with post-war future in Imperial Valley, California, the "Winter Garden of America." Write to Ransdell Refrigeration Service, 116 North Plaza, Brawley, California.

WANTED—Have opening for refrigeration man. Three man shop. Established ten years. Exceptional post-war future. Investigate this. We will discuss salary which we assure you will be in keeping with your ability. T. & R. Supply Company, Inc., 263-275 West Court St., Kankakee, Illinois.

FOR SALE—Universal Tools: pipe wrench, channellock pliers, adjustable wrench, Ceetee pliers, diagonal cutters, hammer, screwdriver, vise-grips, hacksaw, cold chisel, 10 piece set, $19.85. Orders shipped promptly. Remit with order. Catalogue free with order. We have it—can get it—or it isn't made. Dealers Tool Supply, 1527 Grand Ave., Kansas City, Mo.

WANTED—Have profit sharing proposition for reliable service man with established refrigeration firm. Present now earning in excess of $150.00 weekly under this arrangement. No capital required. Please do not apply if investigation will not show you reliable and experienced. Position is in good town in Illinois and living conditions compare with the best any town has to offer. Job steady and post-war future is assured. Address Box JA-3, THE REFRIGERATION SERVICE ENGINEER, 433 N. Waller Ave., Chicago 44, Illinois.

WANTED—REFRIGERATION SERVICE MEN. We offer steady employment—High wages, plus Car Allowance and Commissions on new equipment sales to experienced domestic and commercial servicemen. Excellent opportunity for advancement. Make arrangements now to work for a large, long established Service Company holding service contracts with national manufacturers, such as Kelvinator, Stewart Warner, Hot Point and others. Write us today, giving experience, background, and other pertinent details. Murphy & Miller, Inc., 1326 S. Michigan Ave., Chicago 5, Illinois.

DOMESTIC CONTROLS $2.00
AUTOMATIC VALVES 1.50
THERMOSTATIC VALVES 3.00

Repaired or exchanged also sold outright at slightly higher prices.

Prices f.o.b. Chicago

All work done on money back guarantee

REFRIGERATION SURPLUS DEALERS
2289 N. Karlov Ave. Chicago 39, Ill.

DAVISON'S SILICA GEL PROVIDES

Extra Protection

Davison's Silica Gel has become the industry's preferred drying agent because it *does more* for you than ordinary drying agents...gives you protection beyond removal of moisture.

FIRST—it is processed especially for the dehydration of refrigerants.

SECOND—its scientifically-determined particle size assures you that refrigerant will not channel—will be distributed evenly throughout cartridge.

THIRD—This even distribution of the refrigerant makes it possible for it to be in complete contact with the entire pore surface area (7,500,000 sq. in. per cu. in. of Silica Gel) at all times.

FOURTH—it removes acids and corrosive compounds . . . in addition to moisture . . . instantly.

FIFTH—its capacity for moisture is not affected by oil.

SIXTH—it will not cake nor powder.

SEVENTH—will not attack metals or alloys.

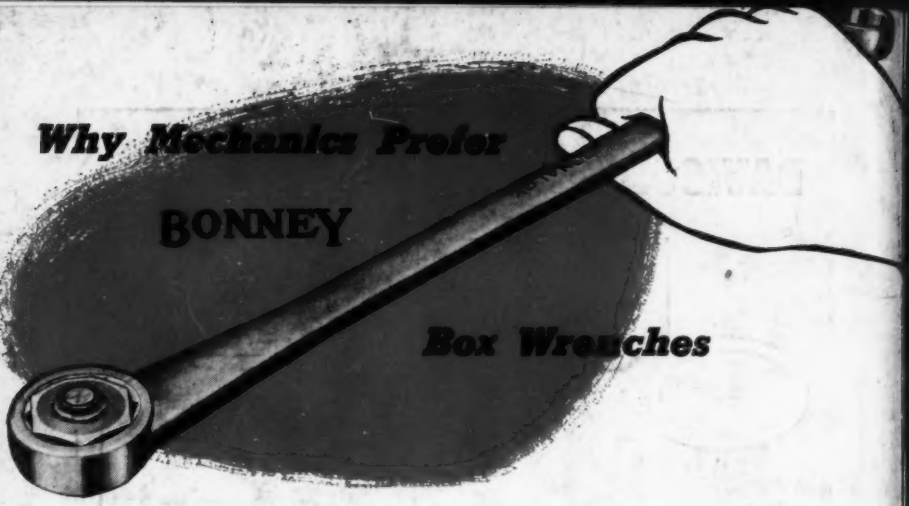
To get this COMPLETE DRYING AGENT that is effective on Freon, Methyl Chloride, Sulfur Dioxide, etc., specify Davison's Silica Gel from your jobber . . . in factory-charged dehydrators or in bulk for refill.

CURTIS BAY WORKS

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.



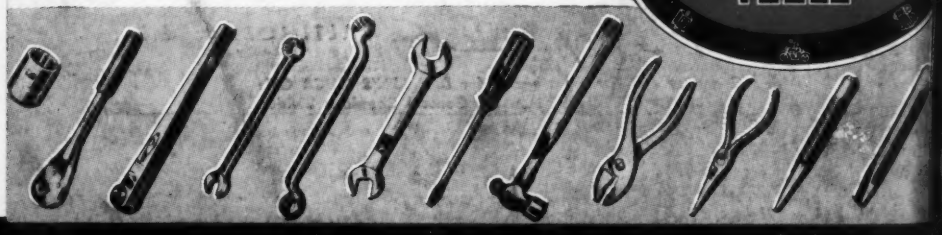
Here's what you as a good mechanic want to know about a wrench. Is it easy to use? Does it speed up the job? How long will it last? With Bonney Box Wrenches you have the RIGHT answers to these questions.

These extra thin-wall wrenches fit into just about any tight clearance spot you can name and their well-balanced design makes them easy to use. Bonney Wrenches won't stretch or break. In addition to being drop-forged, they are precision heat-treated to get just the right degree of hardness and toughness. Bonney Wrenches are easy to get on and off the nuts. The double hexagon openings are *pull-broached* to assure extreme accuracy and clean, smooth openings. And besides, the heads of Bonney Wrenches are reinforced with extra metal for maximum safety and long life.

You bet, mechanics who appreciate the best in hand tools buy Bonney.

For your convenience, Bonney Tools are sold exclusively through jobbers and distributors from coast to coast. Ask for Bonney Box Wrenches today. If your jobber does not have them in stock, he will be glad to order them for you.

BONNEY FORGE & TOOL WORKS
717 N. Meadow St. • Allentown, Pa.
IN CANADA: GRAY-BONNEY TOOL COMPANY, LTD.
St. Clarens & Royce Aves., Toronto

TWO TYPES FOR EVERY PURPOSE

Bonney 15° Angle Box Wrenches are made in two types. The *short* type for extremely close quarter work—with openings ranging from 5/16" to 9/16". The *long* type for general use—with openings from 3/8" to 1 1/16". Both types have different size openings in each end. Also available in double-offset short and long types.